

Richardson Grove Operational Improvement Project

HUMBOLDT COUNTY, CALIFORNIA
DISTRICT 1 – HUM – 101, PM 1.1/2.2
464800

Final Environmental Impact Report/ Environmental Assessment and Programmatic Section 4 (f) Evaluation



**Prepared by the
State of California Department of Transportation**

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.



May 2010

GENERAL INFORMATION ABOUT THIS DOCUMENT

What's in this document:

The California Department of Transportation (Department) as CEQA lead agency and as assigned by the Federal Highway Administration (FHWA), has prepared this Environmental Impact Report/Environmental Assessment (EIR/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Humboldt County, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, the potential impacts from each of the alternatives, and the proposed avoidance, minimization and/or compensation measures.

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Deborah Harmon, Environmental Planning, 1656 Union Street, Eureka, CA 95501; (707) 445-6431 Voice, or use the California Relay Service 1-800-735-2929 (TTY to Voice), 1-800-735-2922 (Voice to TTY) or 711.

It should be noted that at a future date, the Department acting through FHWA or another federal agency may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that a final action has been taken on this project by the Department or another federal agency. If such notice is published, a lawsuit or other legal claim will be barred unless it is filed within 180 days after the date of publication of the notice (or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the federal agency action is allowed). If no notice is published, then the lawsuit or claim can be filed as long as the periods of time provided by other Federal laws that govern claims are met.

RICHARDSON GROVE OPERATIONAL IMPROVEMENT PROJECT

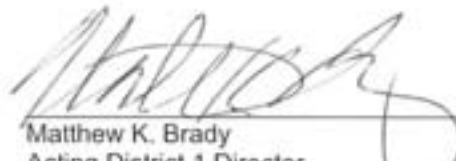
US Route 101, in Humboldt County near Garberville from 0.5 miles south to 0.5 miles north of Richardson Grove Undercrossing

**FINAL ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT and
Programmatic Section 4(f) Evaluation**

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C) and 49 U.S.C. 303

THE STATE OF CALIFORNIA
Department of Transportation

5/18/10
Date of Approval


Matthew K. Brady
Acting District 1 Director
California Department of Transportation

CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICAN IMPACT

FOR

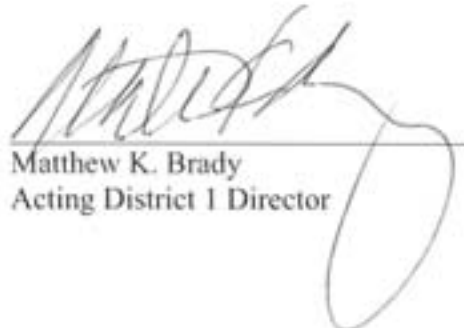
RICHARDSON GROVE OPERATIONAL IMPROVEMENT PROJECT

The California Department of Transportation (Caltrans) has determined that the preferred alternative will have no significant impact on the human environment. This FONSI is based on the attached Environmental Assessment, Programmatic Section 4(f) Evaluation, Historic Properties Survey Report, and Biological Assessment which have been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an EIS is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA and Programmatic Section 4(f) Evaluation.

The environmental review, consultation, and any other action required with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

5/18/10

Date



Matthew K. Brady
Acting District 1 Director

Summary

The proposed project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA), and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The Department is the lead agency under CEQA. In addition, FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, it is quite often the case that a "lower level" document is prepared for NEPA. One of the most commonly seen joint document types is an Environmental Impact Report/Environmental Assessment (EIR/EA).

After consideration of the public comments on the Draft EIR/EA, the Department will certify the EIR and issue Findings and a Statement of Overriding Considerations under CEQA and issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement (EIS) under NEPA.

The purpose of the proposed project is to adjust the roadway alignment to accommodate Surface Transportation Assistance Act (STAA) truck travel, thereby removing the restriction for STAA vehicles, and improve the safety and operation of US Route 101 while also improving goods movement. The proposed project which extends from PM 1.1 to PM 2.2 would include minor realignments and widening of the existing roadway, culvert improvements, and repaving the roadway. The posted speed limit would not be raised. The only alternatives under consideration are the preferred alternative and the no build.

The Department proposes to improve a one mile section of US Route 101 from one mile north of the Mendocino/Humboldt County line to approximately eight miles south of the

community of Garberville. A portion of the improvements to US Route 101 would occur within Richardson Grove State Park. US Route 101 is the primary north-south route serving coastal California and is critical to the commerce of northwestern California. Industry standard-sized trucks conforming to the Surface Transportation Assistance Act of 1982 (STAA) are currently prohibited from traveling US Route 101 north of Leggett due to the narrow and curvilinear roadway alignment in combination with large redwood trees adjacent to the traveled way through Richardson Grove. Northwestern California is one of the few remaining areas of the State that STAA trucks are not permitted.

“California Legal” truck configurations, with a 65 foot overall length are allowed to travel on State Highways throughout District 1 (Del Norte, Humboldt, Mendocino, and Lake Counties). STAA truck configurations, as established by the Surface Transportation Assistance Act of 1982, are restricted throughout much of District 1. These STAA vehicles are defined as having either a 48 foot trailer, or as having a 53 foot trailer with a limit of 40 foot distance from kingpin of the cab to the rear axle of the trailer. STAA trucks have been prohibited from this section of US Route 101 because the tight radius curves between the large redwood trees make it difficult for the longer trucks to stay within the travel lane without using part of the opposing lane of traffic (“off-tracking”) or traveling off the roadway and using unpaved shoulders.

The existing roadway through Richardson Grove State Park is a narrow two-lane conventional highway facility on a nonstandard alignment with 11 to 12 foot lanes and 0 to 4 foot shoulders averaging less than 2 feet. This one mile section of US Route 101 is part of a three mile gap in an otherwise continuous 4-lane freeway/expressway from Cummings in Mendocino County (PM 81.4) to Eureka in Humboldt County (PM 74.6), a distance of 96 miles.

The primary environmental impacts resulting from the proposed project are tree removal resulting from cuts and fills that are necessary to accommodate the highway improvements. Six redwoods ranging in size from four to nineteen inches at diameter breast height (diameter of the tree trunk 4.5 feet above ground) as well as twenty Douglas fir trees ranging from four to twenty three inches at diameter breast height are proposed to be removed within the

project limits. In addition, construction would occur within the structural root zone¹ of old growth redwoods abutting the existing roadway and the root systems of these trees could be further affected. Construction of a cut slope north of Richardson Grove State Park would affect the visual setting for residents and visitors to the Singing Trees Recovery Center. Temporary construction impacts would include noise, lights, traffic delays, and interruptions to the view that would affect visitors utilizing the campground, trails, and Visitor Center at the park.

Coordination with the general public and appropriate public agencies has occurred continuously. Three public meetings in addition to the public hearing have been held and advertised in local newspapers. Meetings have also been held with Native American groups and staff from US Fish and Wildlife Service, California Department of Fish and Game, Regional Water Quality Control Board, and California Department of Parks and Recreation. Additionally, several meetings to share information regarding the project have been held with various civic groups such as Rotary Clubs, Lions Clubs, and Chamber of Commerce. There is both strong support and opposition for this project. Approximately 800 comments letters and emails were received during the public circulation of DEIR/EA.

Project approvals have been obtained from US Fish and Wildlife Service, National Park Service, California Department of Parks and Recreation, and California Office of Historic Preservation. Permits will be required from the US Army Corps of Engineers, California Department of Fish and Game, and Regional Water Quality Control Board.

¹ Structural root zone is a circular area with the tree trunk at the center and a radius equal to three times the diameter of the tree trunk measured at breast height (4.5 feet above ground level). Most of the tree's structural roots are located within this area. (Department of Parks and Recreation, 2005)

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Initial Site Assessment	Foundation Report
Aerially Deposited Lead Site Investigation Report	Revegetation Plan
Noise	Floodplain Evaluation Summary Report
Historic Properties Survey Report	Community Impacts: Growth Analysis
Visual Impact Assessment	Transportation Management Plan
Natural Environment Study	Project Report
Biological Assessment	
Economic Study	

Chapter 1. PROPOSED PROJECT

1.1 INTRODUCTION

The Department of Transportation proposes to improve a one mile section of US Route 101 from one mile north of the Mendocino/Humboldt County line to approximately eight miles south of the community of Garberville (postmile 1.1 to 2.2). A portion of the improvements to US Route 101 would occur within Richardson Grove State Park. US Route 101 is the primary north-south route serving coastal California and is critical to the commerce of northwestern California. Industry standard-sized trucks conforming to the Surface Transportation Assistance Act of 1982 (STAA) are currently prohibited from traveling US Route 101 north of Leggett due to the narrow and curvilinear alignment in combination with large redwood trees adjacent to the traveled way through Richardson Grove. A few exceptions to the restriction are granted by legislation. This legislation granting this exception to livestock haulers sunsets in January 2012. Figures 1 and 2 show project location and vicinity map.

The section of US Route 101 in and around Richardson Grove State Park follows the westerly bank of the South Fork Eel River and meanders through a scenic corridor lined by large old growth redwoods², novelty shops, restaurants, service stations, campgrounds, and a drug and alcohol recovery center with cottages. The existing roadway through Richardson Grove State Park, constructed around 1915, is a narrow two-lane conventional highway facility with a posted speed limit of 35 mph. In several locations through the park mature redwood trees up to 16 feet in diameter encroach into the shoulders. The trees within the park boundaries restrict sight distance and horizontal clearances, as well as result in small radius curves. North of the park, the roadway consists of two 12-foot lanes with 0-4 foot paved shoulders. This section of US Route 101 is part of a three mile gap in an otherwise continuous 4-lane freeway/expressway from Cummings in Mendocino County (PM 81.4) to Eureka in Humboldt County (PM 74.6), a distance of 96 miles.

² For the purposes of this document, the definition of old growth redwood would be trees over 30 inches in diameter at breast height (4.5 feet above ground level)

Current restrictions for STAA trucks are in place primarily because of concerns with ‘off-tracking’ of these longer trucks when they travel around tight curves in proximity to fixed objects (old growth redwood trees). Off-tracking is the tendency for the rear tires to follow a shorter path than the front tires when turning. Off-tracking may cause the vehicle to clip trees, knock down signs, encroach onto shoulders, or cross into the opposing /adjacent lane of traffic. The restriction of STAA vehicles at Richardson Grove is the only remaining location on US Route 101 restricting access of STAA trucks traveling into Humboldt County. This project would adjust the roadway alignment to allow STAA truck travel and help other large vehicles such as recreational vehicles (RV), buses, trucks, etc. safely travel through Richardson Grove. This improvement in goods movement will help area businesses stay competitive in the marketplace.

This project is programmed in the 2008 State Highway Operation Protection Plan/Program (SHOPP) for \$5.5 million for construction and \$154,000 for Right of Way for a total of \$5.65 million.

1.2 PURPOSE AND NEED

The purpose of the proposed project is to adjust the roadway alignment so that two STAA trucks passing in opposite directions can be accommodated. By making minor realignment improvements to accommodate STAA trucks, the prohibition for STAA vehicles would be removed and the safety and operation of US Route 101 would be improved while also improving goods movement. The proposed project has logical termini (rational end points) as it addresses the curves that currently result in the STAA vehicle prohibition. The project has independent utility as no further improvements on US Route 101 are required to lift the restriction on STAA vehicles between Humboldt and Mendocino Counties.

The primary need for the project is result of the non-standard curves, absence of shoulders and fixed objects in close proximity of the travelled way.

US Route 101 is part of the California Freeway and Expressway System and is included in the National Highway System. It is classified as a rural principal arterial, and this portion of US Route 101 is part of the Pacific Coast Bike Route. US Route 101 is part of the Strategic

Highway Network and is listed as a High Emphasis Route in the Interregional Transportation Strategic Plan.

STAA trucks are limited to the National Network (primarily Interstate and Defense Highways such as I-5, I-10, and I-80), Terminal Access routes (portions of State routes or local roads that can accommodate STAA trucks and allow STAA trucks to travel between National Network routes or allows STAA trucks to reach the truck’s operating facility or a facility where freight originates or terminates), and Service Access routes (routes within one road mile of the National Network, which provide access to fuel, food, lodging, or repair) which together comprise the STAA network. “California Legal” trucks can use the STAA network and California Legal routes (State routes that allow California Legal-size trucks). US Route 101 is classified as a terminal access route (See Figure 3) and STAA vehicles are allowed with the exception at Richardson Grove.

US Route 101 through Richardson Grove is a narrow, two-lane road on a non-standard alignment with 11 to 12 foot lanes and 0 to 4 foot shoulders averaging less than two feet. The roadway alignment meanders through a redwood forest with short or non-existent straight or tangent sections followed by compound, reversing, and variable radius curves. The dimensions of the curves (curve radii) are not constant within the project limits and the tight curves do not meet current design standards. Other features of the roadway that do not meet current design standards include: shoulder width, distance to a fixed object, stopping sight distance, corner sight distance, and superelevation rate. Superelevation is the tilting of the roadway that results in a banked turn. Inadequate superelevation can cause vehicles to skid as they travel through a curve.

‘California Legal’ truck configurations, with a 65-foot overall length, are allowed to travel on State Highways throughout District 1 (Del Norte, Humboldt, Mendocino, and Lake Counties). STAA truck configurations, as established by the Surface Transportation Assistance Act of 1982, are restricted throughout much of District 1. STAA vehicles are defined as having either a 48-foot trailer, or as having a 53-foot trailer with a limit of 40 feet distance from kingpin of the cab to the rear axle of the trailer (Figure 3). The key difference between STAA trucks and CA-Legal trucks is that STAA trucks can be composed of longer

trucks and trailers and can carry a larger volume of cargo. However, STAA trucks have the same weight restrictions as CA-Legal trucks, so high weight goods do not receive the same benefit from STAA access as other goods. STAA trucks have been prohibited from this section of US Route 101 because the tight radius curves between the trees make it difficult for the longer trucks to stay within the travel lane without using part of the opposing lane of traffic (“off-tracking”) or traveling off the roadway and using the shoulders.

For example, one curve within the project limits at PM 2.1 has lane widths of approximately 12 feet, including shoulder. Computer modeling was done at this curve. The best-case scenario requires the STAA vehicle to travel flush with the outside edge of the paved shoulder. With this best-case scenario, the model still shows STAA vehicles crossing the centerline of the road by a minimum of 0.26 feet on the existing alignment.

California plays an important role in the global goods movement network. But the State’s large population and market size means that there is a large demand for goods movement to service California’s agricultural, natural resources, and manufacturing sectors. From an economic perspective, the goods movement industry is one of the biggest economic engines within the State. According to the California Employment Development Department, the goods movement industry supports one out of seven California jobs, contributing more than \$200 billion per year to the State’s economy and producing more than \$16 billion in tax revenues to state and local government.³

According to Humboldt County’s 2008 Regional Transportation Plan (RTP), “Truck transport is and will continue to be the primary method of goods movement into, within, and out of Humboldt County.” Moreover, the RTP recognizes that truck transportation is a major component of many industries doing business in Humboldt County and the north coast. The RTP goes on to state, “Local service trucking represents the largest share of truck traffic, supporting local business and consumer markets. Domestic long-haul trucking provides access to national markets and connections to major goods suppliers. Restrictions on vehicles longer than 65 feet at Richardson Grove on US Route 101 north of Mendocino County and at Buckhorn Summit on SR 299 limit goods movement. These factors increase

³ Southern California Association of Governments, “Southern California Regional Goods Movement: A Plan for Action,” March 2005

the need to support the efficient movement of goods for the economic benefit of the County.” The RTP also states, “Truck length restrictions and backhaul opportunities in Humboldt County are preventing businesses from being profitable and competitive with other similar business along the west coast.”

While Humboldt County is accessible to STAA from the north via US Route 101 from Oregon, for trips originating south of Humboldt County a detour of several hundred miles is required. For example, from Oakland, STAA vehicles would have to go into Oregon via I-5 before going west to access US Route 101 on the coast and then heading south via US Route 101 to Eureka or other destinations in Humboldt County, a distance of 725 miles one way. With no STAA restriction, the trip from Oakland to Eureka (for example) would be 279 miles. As these STAA vehicles have become the “national standard,” areas that do not have access for these trucks are at an economic disadvantage because truck cargos must be unloaded and transferred to shorter trucks coming into and out of the county, which results in making goods movement more expensive and less timely. In addition, many local businesses must maintain higher inventories due to erratic deliveries and damage during transfers. Local companies with major freight needs have relocated out of the area or gone out of business in part due to transportation problems. According to one study⁴, local businesses and residents pay about 10 to 15 percent more for goods due to poor truck access, increasing the decline of locally-owned retail businesses out of Humboldt County. Several businesses, including lumber, floral, food and other manufacturing, as well as the local newspaper, have noted higher costs and have considered relocating out of the County.

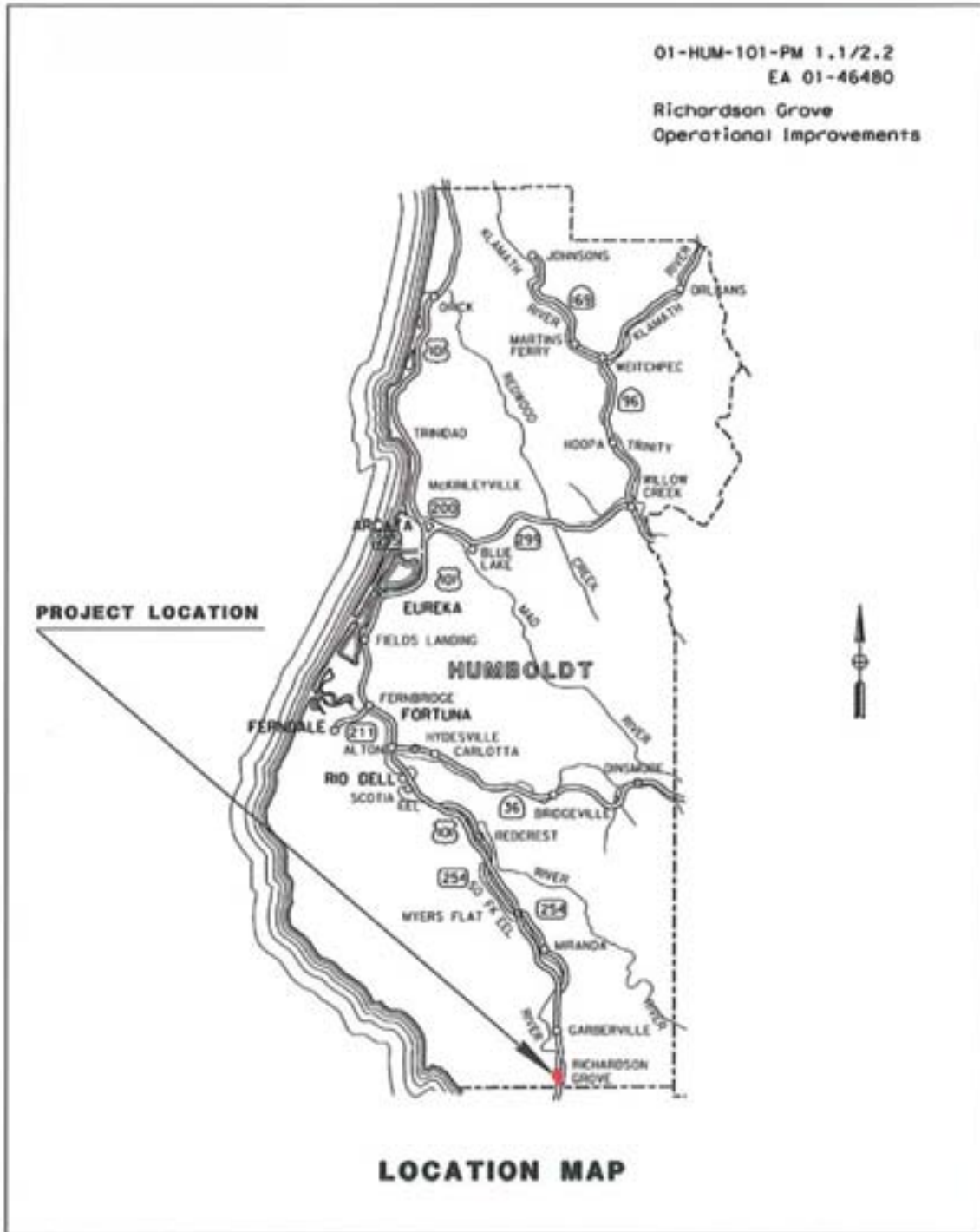
There are other local income losses due to the STAA restriction, primarily lost exports. Estimates of lost sales provided by local businesses participating in a survey sponsored by the Humboldt County Workforce Investment Board in 2008 indicated there are four general categories: 1) due to limitations on truck size, a portion of production has to be shifted to out of area subsidiaries; 2) higher truck transportation costs create such a competitive disadvantage that businesses are forced to abandon the attempt to export certain categories of commodities; 3) in some cases, shipping delays lead to reduced consumer satisfaction and thus the loss of export markets; and 4) in order to mitigate the impacts of shipping delays on

⁴Cambridge Systematics, Inc. “Transportation for Economic Development” June 2003

production schedules or sales, there are businesses utilizing a mitigation strategy involving increased inventory.

The realignment improvements would also improve safety for other large vehicles such as motor-homes, buses, and vehicles pulling a trailer. The Humboldt County 2008 Regional Transportation Plan identifies the Richardson Grove Operational Improvement Project in its Action Plan for Goods Movement. The Plan includes Policy GM-5, promote truck route improvements, with the objective of, “Support roadway improvements for commercial vehicle access, and conduct further studies to determine trucking industry needs and options to eliminate barriers to freight movement, and to improve safety along truck routes.” The proposed project was also recommended in the 2002 and 2006 Humboldt County Regional Transportation Plans.

Figure 1 Project Location Map



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Figure 2 Project Vicinity Map

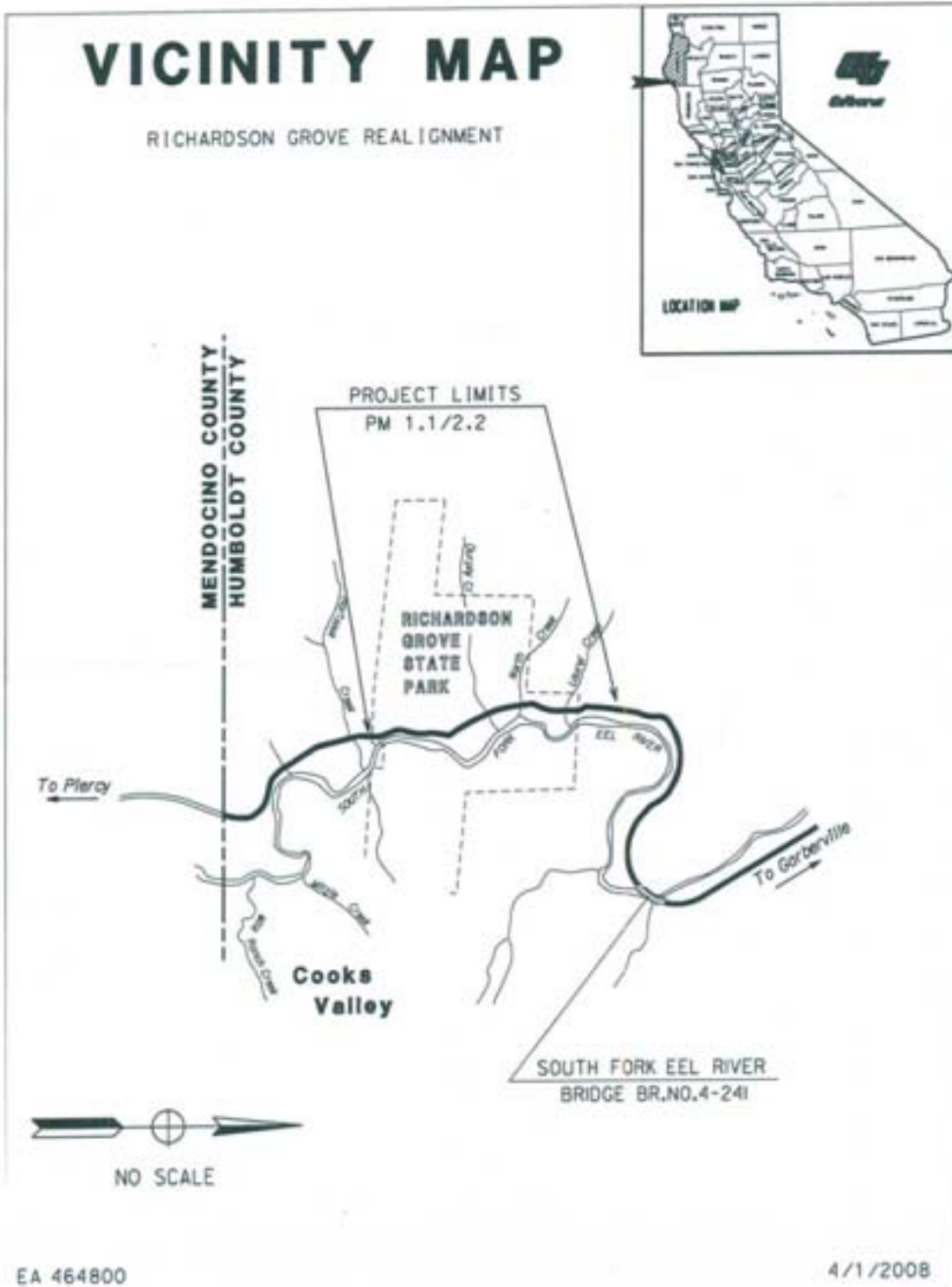


Figure 3 STAA Truck Access Routes In District 1



TRUCK MAP LEGEND TRUCK LENGTHS & ROUTES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION



STAA ROUTES In California the STAA Network consists of the National Network (green) routes and Terminal Access (blue) routes. STAA trucks (green trucks) are limited to the green and blue routes and use highways "...which provide reasonable access to terminals and facilities for purposes limited to fuel, food, lodging, and repair when that access is consistent with safe operation... and when the facility is within one road mile of identified points of ingress and egress..." Use of unidentified local streets and roads requires prior approval from local highway authority. See: CVC 35401.5(c)



STAA Truck Tractor - Semitrailer

Semitrailer length : 48 feet maximum
 KPRA* : no limit
 Overall length : no limit *(KPRA = kingpin-to-rear-axle)



Semitrailer length : over 48 feet up to 53 feet maximum
 KPRA : 40 feet maximum for two or more axles,
 38 feet maximum for single-axle trailers
 Overall length : no limit



STAA Truck Tractor - Semitrailer - Trailer (Doubles)

Trailer length : 28 feet 6 inches maximum (each trailer)
 Overall length : no limit



Terminal Access - STAA trucks may travel on State highways that exhibit this sign.



Service Access - STAA trucks may travel up to one road mile from the off ramp to obtain services (food, fuel, lodging, repairs), provided the route displays this sign.

CALIFORNIA LEGAL ROUTES California Legal trucks (black trucks) can travel on STAA routes (green and blue routes), CA Legal routes (black routes), and Advisory routes (yellow routes). CA Legal trucks have access to the entire State highway system except where prohibited (some red routes).



California Legal Truck Tractor - Semitrailer

Semitrailer length : no limit
 KPRA : 40 feet maximum for two or more axles,
 38 feet maximum for single-axle trailers
 Overall length : 65 feet maximum



California Legal Truck Tractor - Semitrailer - Trailer (Doubles)

Option A
 Trailer length : 28 feet 6 inches maximum (each trailer)
 Overall length : 75 feet maximum
 Option B
 Trailer length : one trailer 28 feet 6 inches maximum
 other trailer may be longer than 28 feet 6 inches
 Overall length : 65 feet maximum



CA LEGAL ADVISORY ROUTES - CA Legal trucks only; however, *travel not advised* if KPRA length is over posted value. KPRA advisories range from 30 to 38 feet.

SPECIAL RESTRICTIONS - Route restricted for vehicle length or weight, cargo type, or number of axles.

Collision Data

The current and forecasted traffic data on US Route 101 within the project limits is summarized in Table 1. It is estimated that trucks compose 11 percent of the traffic.

Table 1 Current and Forecasted Traffic Data

	2007	2008	2018	2028
Annual ADT*	5,410	5,520	6,640	7,750
Peak Hour	930	950	1,140	1,330

*ADT- Average Daily Traffic

A five-year collision history for US Route 101 in the project area from April 1, 2002 to March 31, 2007 shows that there were a total of 33 collisions, which included 17 injury collisions and 16 which resulted in property damage. Of these 33 collision incidents, 11 involved multi-vehicles. There were no fatalities. A comparison of actual collision rate to the expected statewide rate for a similar facility is summarized in Table 2.

Within the project limits, the five year collision history indicates the actual collision rate is 3.47 collisions per million vehicle miles. Thus, the actual collision rate is twice the expected collision rate for similar roadways. The collisions are fairly evenly split by direction (18 southbound, 15 northbound). Sixteen of the collisions occurred during daylight, fifteen at night, and two occurred at dusk or dawn. The most frequent type of collision listed was “hit object” (22), followed by “rear end” (6). The type of object struck for 11 of the 22 collisions was listed as “trees,” followed by 10 that cited “other vehicle.” The primary collision factors for these collisions were listed as “improper turn” (14) and “speeding” (9). Other factors listed included “fell asleep” and “influence of alCohol.” The road surface was listed as “dry” for over two thirds of the 33 collisions.

Table 2 Comparison of Actual to Expected Statewide Average

	Fatal	Fatal + Injury	Total
Actual	0.00	1.79	3.47
Statewide Average	0.036	0.87	1.73

*Note: 5 year comparison of actual collision rate to statewide average expressed as number of collisions per million vehicle miles for period ending March 31, 2007

According to the collision history, the most common collision is that of errant drivers striking objects, mostly trees. This could be anticipated on a roadway where the highway segments north and south are both four lane high speed freeway/expressways which then transition to a narrow, two lane roadway with a windy alignment with scenic distractions (the forest) and fixed objects (the trees). Both contribute to a condition of a distracted driver in an environment with little to no clear recovery area, impeded sight distance, and a high consequence of error. These factors, non-standard alignment, fixed objects on or near the shoulders, and scenic value of the setting cannot be improved within the scope of the proposed project.

In an earlier study requested by the California Highway Patrol (CHP) to look at high collision locations in Mendocino and southern Humboldt Counties, the collision rates for the period April 1993 through March 2003 were analyzed. This study, “The US Route 101 Safety and Commerce Study” (2005), found that the five mile segment of US Route 101 (PM 0.0 to 5.22), which includes Richardson Grove State Park, experienced close to the expected statewide average rate for collisions with a fatality (103%), but exceeded the statewide average for injury + fatal (132%) and for total number of collisions (175%). During this time period, truck traffic made up 14-17% of the total traffic. The annual average daily traffic during the period of this study ranged from 5,200 to 5,800 vehicles, which is similar to the present conditions. Of the total number of collisions occurring over the course of the study (164), trucks were involved in 26 of the collisions (16%). Of these 26 collisions involving trucks, ten collisions (38%) occurred as a result of hitting an object. The vast majority of these collisions involving trucks (>70%) occurred in clear weather during daylight hours when the pavement was dry.

A speed survey was taken at Richardson Grove as part of the 2005 study resulted in the following findings. At PM 1.19 which has a posted speed of 40 mph, 85% of the traffic traveled at 45 mph. The highest speed recorded was 51 mph; the lowest recorded was 32 mph with the mean speed being 40 mph. At PM 1.67, which is about 200 feet south of the Richardson Grove State Park entrance, the posted speed limit is 40 mph with an advisory speed limit of 30 mph, 85% of the traffic was traveling at 38 mph. The highest recorded speed was 42 mph and the lowest recorded speed was 23 mph, with the mean speed being 34 mph.

Another speed survey was conducted in April 2008. The results are similar to the previous with the average 85th percentile speed of all traffic at PM 1.18 and PM 1.67 traveling at speeds of 49 mph and 43 mph respectively. Trucks were also measured separately. The overall average 85th percentile speed of large commercial trucks was 4 to 5 mph less than the overall average for all vehicles.

In fall of 2008, the posted speed limit through Richardson Grove was reduced to 35 mph as an independent action from the proposed operational improvement project. The limits of the reduced speed limit extend from PM 1.15 to PM 2.30 which is just north of Hartsook Inn to just north of the Singing Trees Recovery facility. The justification for the reduced speed was based upon the elevated frequency, severity, and “wet” and “dark” collision rates with many single vehicle, “hit object” type of collisions, which indicate that conditions not readily apparent to drivers exist on this highway segment. It is anticipated that lowering the speed should help improve safety and operations of this segment of highway for all users of the highway.

However, it should be noted that reducing the speed would not correct the existing deficiencies in the roadway geometrics, which result in STAA vehicles off-tracking over the center line and encroaching into the opposing lane. The degree of off-tracking for a given vehicle is determined by the truck size and type and the curve dimensions of the roadway, not truck speed. While lowering the speed can lead to motorists being more careful, lowering the speed, in of itself, will not eliminate off-tracking.

Roadway improvements being proposed in this project are incremental improvements to the roadway alignment to create smoother curves with super elevations that minimize large vehicle off-tracking conflicts. The proposed project would include upgraded signing and striping and would provide new pavement with an improved friction factor which should help improve safety. At the north end of the project (PM 2.06 to 2.20), four foot shoulders are proposed which would provide an additional margin of safety.

Background

The Richardson Grove State Park Bypass Project was originally addressed in a Project Report dated September 27, 1955. That Project Report not only included the immediate Richardson Grove area, but an extensive 43-mile section of US Route 101. The California Highway Commission (now the California Transportation Commission) adopted the alignment proposed by this 1955 Project Report in March 1956. Subsequent studies resulted in the adoption of a new 4-lane freeway/expressway alternative (Alternative A) in the vicinity of Richardson Grove State Park in June 1968. Presently, the entire 43-mile section of Route 101 is now a 4-lane freeway/expressway facility except for an approximately 5.5 mile section that includes the Richardson Grove State Park segment.

As part of a request to District Directors in 2000 by the Director of Caltrans to identify and make recommendations on “long-standing projects,” a feasibility study dated September 13, 2001 was prepared. The Richardson Grove Bypass Feasibility Study evaluated the feasibility of constructing Alternative A that was identified in the previous study as well as two additional 4-lane bypass alternatives of US Route 101 through or around the State Park. The study also evaluated an alternative that improved the existing US Route 101 alignment to a 4-lane freeway/expressway. This feasibility study was prepared with the coordination of Humboldt County Association of Governments and the Regional Transportation Planning Agencies as a planning document. The bypass alternatives ranged in cost from \$75 - \$600 million for a three to four mile long bypass and included new bridges over the South Fork Eel River and an interchange at the south end to connect with State Route 271 and the access to the State Park. These alternatives would result in substantial environmental impacts due to the extensive roadway excavation, removal of large redwoods, disruption to the State Park,

visual and water quality impacts as well as impacts to listed species. Improving the existing alignment to a 4-lane facility would require the removal of numerous large redwoods and would not be supported by the California Department of Parks and Recreation. Due to the high costs and substantial environmental impacts, the Feasibility Study concluded all the “build alternatives” were infeasible due to significant engineering, environmental, and economic constraints. The Feasibility Study further recommended that future plans to bypass Richardson Grove State Park be dropped and the Route Concept Report for this section of US Route 101 be revised from a 4-lane freeway/expressway facility to a 2-lane conventional highway. This means that problem locations, either due to operational or safety concerns, would need to be addressed on the existing alignment.

The STAA restrictions resulted in interest groups lobbying for Assembly Bill 2426, enacted in 1998 which provided exemptions to the STAA restriction for licensed carriers of livestock that also meet certain length and other criteria. Various other legislative bills have been enacted amending the original bill. Most recently, Senate Bill 773 enacted in October 2007 extended this exemption until January 2012. Moving vans or household goods carriers are also exempted from the STAA restrictions per the California Vehicle Code Section 35401.5(f).

In January of 2004, the Garberville California Highway Patrol (CHP) office requested Caltrans to investigate the number of truck-related incidents along US Route 101 from Leggett to Confusion Hill and analyze how those incidents disrupted traffic flow. A Task Force consisting of Caltrans, CHP, Humboldt County, Mendocino County, and the California State Parks was formed to direct the study effort. The study that followed, “US Route 101 Safety and Commerce Study - A Report to Improve Safety and Accommodate Commerce on US Route 101,” was produced in April 2005. The study found that collisions involving trucks are especially prone to lengthy cleanup which causes significant delay to traffic. The potential exists for hazardous materials to contaminate the Eel River or other environmentally sensitive areas. In addition, these events strain available emergency response resources.

The current project effort began as a Goods Movement Access Feasibility Study in 2006 resulting from the concern with the STAA vehicle restrictions on this segment of US Route 101. The goal of this Study was to develop and consider alternative ways of providing safe and economically feasible goods movement, including STAA truck access to Humboldt County. The Study also provided information on the potential for developing an alternative using the existing alignment.

A Technical Advisory Group was formed to provide input into the preparation of the study and the selection of the consultant to perform the Study. The Advisory Group included representatives from Humboldt County Association of Governments, Del Norte Local Transportation Commission, Mendocino Council of Governments, Redwood Region Economic Development Commission, California State Parks, Humboldt County Community Development and Public Works Departments, Save the Redwoods League, California Trucking Association, California Highway Patrol, Humboldt County Cattlemen’s Association, Sierra Club, and California Department of Forestry.

A Stakeholders Group was also formed as part of this effort to provide input on various aspects of the study. The members of this group included State and US legislators or their representatives, local legislators from Crescent City, Del Norte County, and Humboldt County, Humboldt County Community Development Department, Humboldt Auction Yard, Hambro Forest Products, Intertribal Sinkyone Wilderness Council, and Redwood Community Action Agency.

In April 2007, prior to assigning a consultant to begin the study, Caltrans initiated the preliminary surveys and research effort to determine if any improvements could be done on the existing alignment that would eliminate the STAA restriction without removing any large redwood trees. Conceptual designs using the computer software “Autoturn” indicated that such improvements were possible. There was overall support and consensus for proceeding forward to develop this on-alignment solution from the Technical Advisory Group. The current project discussed in this environmental document is a refinement of that conceptual design. Since the preliminary information indicated improving the existing alignment was feasible, the study efforts to consider alternatives for goods movement was dropped.

1.3 PROJECT DESCRIPTION

This section describes the proposed action that was developed by a multi-disciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts.

The project is located in Humboldt County on US Route 101 from one mile north of the Mendocino/Humboldt County line (PM 1.1) to approximately 8 miles south of Garberville (PM 2.2). (See Figure 4 Project Features Map) The project is just over one mile in length. Within the limits of the proposed project, US Route 101 is a conventional two lane highway with two 12 foot lanes and 0 to 4 foot shoulders.

The project proposes minor realignments and widening of US Route 101 to correct STAA restrictions at three locations. The proposed project is broken up into three sections: Segment 1 from PM 1.11 to PM 1.70, Segment 2 from PM 1.70 to PM 2.04, and Segment 3 from PM 2.04 to PM 2.20. The curves restricting STAA access are located in segments 1 and 3. Cuts and fills to accommodate realignments and widening, drainage improvements, repaving, and restriping would occur in segments 1 and 3. Only pavement overlay and restriping with one minor drainage improvement would occur in segment 2. See Figure 5 and layout maps in Appendix L.

1.4 ALTERNATIVES

1.4.1. Proposed Build Alternative

Between the circulation of the draft environmental document and approving the final environmental document, the project evolved in response to public comment and as a result of coordination with resource and regulatory agencies. The changes include modifying the retaining wall, modifying some of the culvert improvements, and water quality improvements. The retaining wall modifications include moving the wall from west side of the highway to the east side of the highway, shortening the length by approximately 100 feet, and changing the wall type from a wall above the road to a wall below the road. Culvert modifications include replacing the culvert at PM 1.34 instead of installing a pipe liner, and

eliminating the pipe liner at the culvert at PM 1.18. Water quality improvement includes removing a restroom no longer in service near the Visitor Center in the park which would decrease the impervious surface in the general project area.

Preferred Alternative

The project has been broken into three segments. The first segment includes PM 1.1 to PM 1.7. In this segment there would be minor realignments of the existing roadway to minimize off-tracking conflicts between large vehicles and fixed objects (trees). Two 12-foot lanes with 2-foot shoulders are proposed where possible. This work would require minor earthwork, sliver widening of the roadway and adjustments to the super-elevation (to “bank the curves”). The maximum lateral change in the alignment would be 17 feet, but the average alignment shift from the existing centerline would be approximately 2 to 6 feet.

The main areas of cut and fill include: PM 1.35 to PM 1.36 cut with approximately 300 cubic yards; PM 1.37 to PM 1.39 fill with approximately 200 cubic yards; and PM 1.56 to PM 1.61 fill with approximately 200 cubic yards. The roadway in this segment would be slightly widened to provide for two foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement.

The 18-inch diameter culverts at PM 1.28 and PM 1.35 would be replaced with 24-inch diameter culverts. The 18-inch diameter culvert at PM 1.34 would be replaced with an 18-inch diameter culvert. The 18-inch diameter culvert at PM 1.18 would be extended and the existing headwall would be replaced with a drainage inlet. The existing open graded asphalt would be ground off and a new open graded paving would be placed. Finally, pavement striping would be replaced.

The second segment from PM 1.7 to PM 2.04 involves removing and replacing the existing open graded pavement and striping, and extending a berm to divert water into a downdrain to connect to the culvert at PM 1.78. There are no STAA restrictions in this segment, so no realignment or widening is proposed.

The third segment, from PM 2.04 to PM 2.20 involves widening the roadway to provide for wider shoulders, and realigning the roadway to minimize off-tracking conflicts between large

vehicles and fixed objects. The majority of this segment is located outside the park boundary which is located on US Route 101 at PM 2.05. From PM 2.02 to PM 2.07, two 12-foot lanes with two 2-foot shoulders are proposed. From PM 2.07 to PM 2.14 two 4-foot shoulders are proposed. For the remainder of this segment the roadway would transition from the two 4-foot shoulders to the existing roadway width. From PM 2.04 to PM 2.10, the proposed alignment would be shifted approximately ten feet into an existing cut slope west of the highway. Between PM 2.10 and PM 2.15 the proposed alignment would be shifted slightly to the east. A 200-foot long soldier pile retaining wall would be constructed that would support the roadway from below the road. The “below the road” retaining wall was developed in response to public comments about the visual impacts and the number of tree removals that had been proposed. By shortening the length of the wall and moving the location from the west to the east, tree removals were reduced from approximately 30 trees to 5. The shorter wall also reduced the number of working days needed to construct it.

The wall would begin at the Singing Trees facility about five feet from the existing pavement and extend 200 feet to a small roadway through cut to the north. The wall would be 10 to 13 feet in height, but since it would be below the road, it would be much less visible to travelers on US Route 101. At the northern end, the wall would be about ten feet east from the existing pavement. The wall would have timber lagging on the face of the wall. At each end of the soldier pile wall, a short section of gabion wall (steel mesh box filled with rocks) would be constructed in order to protect the large trees located in each of these areas. Excavation for the gabion wall would not be deeper than the base of the tree so the root structure would not be substantially impacted. The work also includes cutting approximately three additional feet from an existing cut slope for a length of about 60 feet just north of the soldier pile and gabion walls. A concrete barrier with a metal bike railing would be installed on top of the soldier pile wall and a metal beam guardrail barrier would be installed on top of the gabion wall which would be visible to the motorists. East of the highway across from the soldier pile wall, the base of the existing cut slope will be cut into to gain width for the shoulders. To construct the retaining wall, the northbound lane would be used as a construction work area. A temporary signal would be installed to facilitate the one way traffic.

The main area of cut in this segment is from PM 2.04 to PM 2.10 to accommodate the wider shoulders. This cut would result in approximately 2,200 cubic yards of excess material and extends from the Singing Trees facility south to just past the park boundary. The area of cut within the park is located on the slope below some park housing units.

A 24-inch diameter culvert at PM 2.10 would be replaced with a 24-inch diameter culvert, a new overside drain installed, and a new inlet structure constructed. The culvert outlet would be embedded in the gabion wall and rock slope protection would be added at the outlet as an energy dissipater. A PVC pipe inside the existing culvert that conveys water to the Singing Trees facility would be relocated adjacent to the new culvert. The existing open-graded asphalt would be ground off and new open-graded pavement would be placed. Finally, pavement striping would be replaced.

Construction of the retaining wall requires the installation of temporary signals to accommodate one way traffic about 100 feet away from the location of the wall to the north and south. Three additional flashing warning beacons would be located at approximately 500 foot intervals in advance of the signals to warn motorists of the approaching signal. Each of the beacons would be connected to a power source via a buried cable that would be placed in a shallow four inch wide trench within the roadway pavement.

Other Elements of the Preferred Alternative

The majority of excess material generated by the project would be disposed at a site located just south of the project within Caltrans right of way on US Route 101 in Mendocino County at PM 106.50. Some material would be reused within the project limits.

The proposed project would also include shoulder backing and updating signs. The majority of disturbed areas would be replanted in kind. Night construction would likely be utilized for portions of the work to minimize traffic delays during peak traffic. The project would require additional right of way from both private property owners as well as the park. In the park, the highway lies within an easement from the California Department of Parks and Recreation and the easement would need to be revised to include both some new areas that would be incorporated into the easement as well as removing some areas from the easement

that are no longer needed for operating and maintaining the roadway. Areas that would be removed from the easement would be scarified and replanted.

Construction staging areas would be on the paved roadway and gravel shoulders. One staging area includes the large paved turnout just north of the project limits.

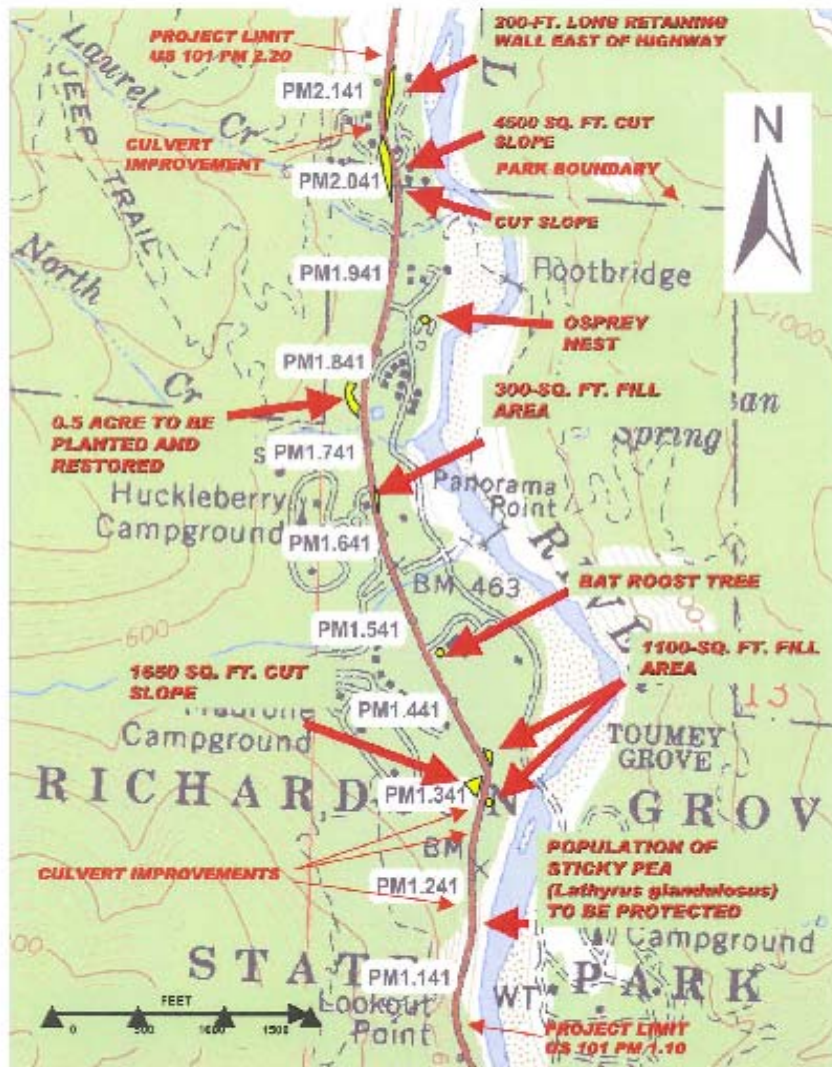
As the proposed project results in an increase in impervious surfaces in the project area, options were considered that would result in decreasing impervious surfaces in the general area. Working with State Park staff, one improvement project was identified that would reduce the amount of existing impervious surface area within Richardson Grove State Park. This improvement would include removal of a public restroom at the Visitor Center that is adjacent to a leaning redwood tree. This restroom is currently closed to the public due to the threat of the tree falling onto the restroom. By removing the restroom and its foundation approximately 900 square feet of hardened surface would be removed. Removing the foundation will require use of heavy equipment to break up the concrete. Excavation would be approximately 12 inches in depth. As the restroom is not currently in use, there would not be an impact to park visitors.

The proposed project would require mandatory design exceptions to the following Caltrans highway design standards:

- Minimum Design Speed and Curve Radii
- Shoulder Width
- Minimum Super-elevation Rate
- Stopping Sight Distance
- Minimum Distance to a Fixed Object
- Corner Sight Distance

Advisory Exceptions would be required for alignment consistency; compound curves, super elevation transitions, clearance to a fixed object within Clear Recovery Zone; and Side Slopes steeper than 4:1.

Figure 4 Project Features Map

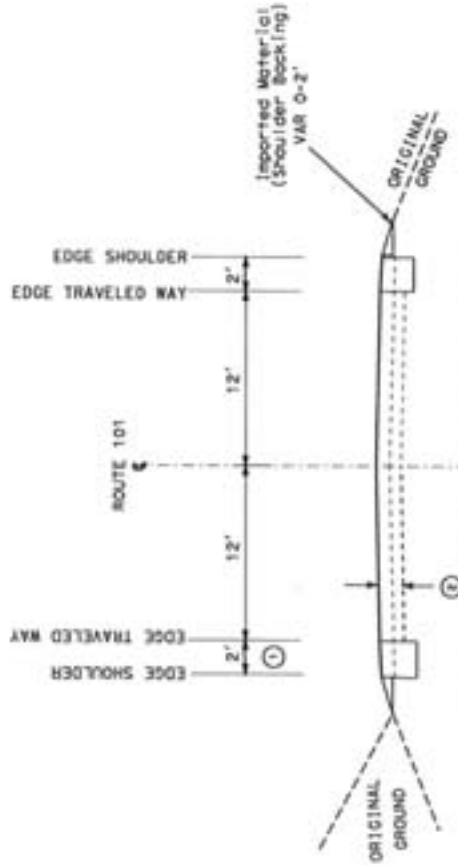


Garberville USGS 7.5 Minute Quadrangle
T5S, R3E, S 11 & 12

Figure 5 Typical Cross Section



PROJECT	DATE	SCALE	REVISIONS
01	1/1/20	1" = 12'-0"	1. 1/21/20



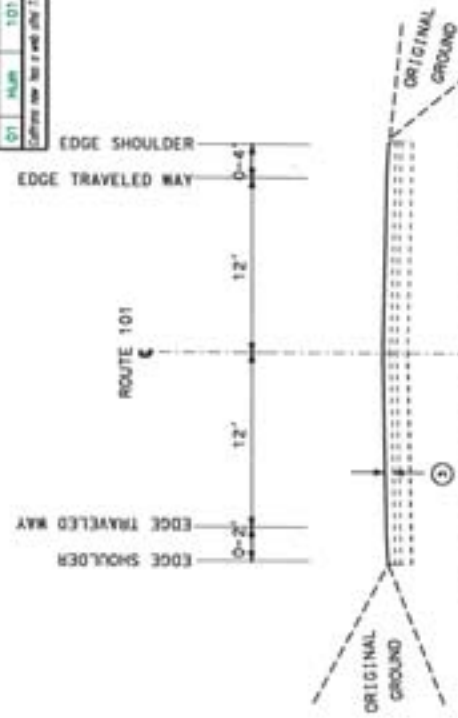
Proposed Typical Section

LOCATION 1, PM 1.2 TO 1.70
(BEGIN TO RICHARDSON GROVE PARK ENTRANCE)



Existing Typical Section

LOCATION 1, PM 1.2 TO 1.70
(BEGIN TO RICHARDSON GROVE PARK ENTRANCE)



Proposed Typical Section

LOCATION 2, PM 1.70 TO 2.04
(RICHARDSON GROVE PARK AREA)



Existing Typical Section

LOCATION 2, PM 1.70 TO 2.04
(RICHARDSON GROVE PARK AREA)

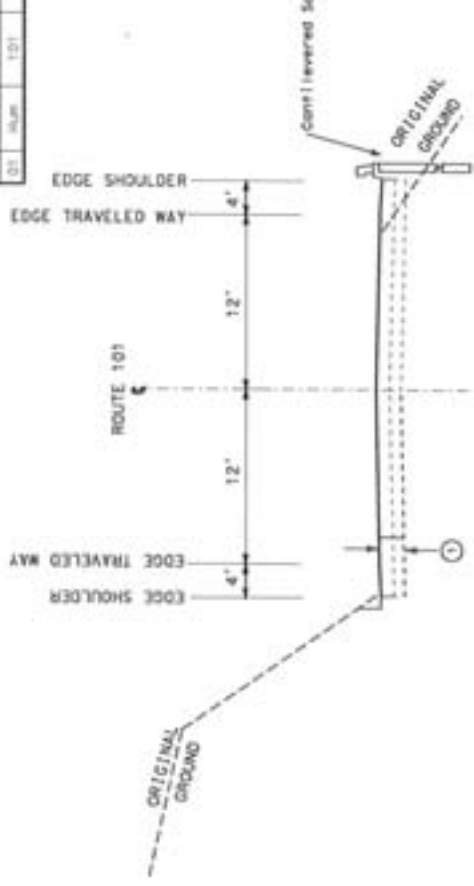
- NOTES:
- 1 EXISTING ROADWAY HAS 0 - 2' SHOULDERS. OLDGROWTH REDWOOD TREES LIE ADJACENT TO THE TRAVELED WAY. PROPOSED ROADWAY WILL HAVE 2' SHOULDERS WHERE POSSIBLE. EXISTING OLDGROWTH REDWOODS SHALL REMAIN.
 - 2 ROADWAY WILL CONSIST OF NEW STRUCTURAL SECTION WHERE WIDENING WILL OCCUR. UNPAVED PORTIONS OF EXISTING ROADWAY WILL BE REMOVED.
 - 3 THE ENTRANCE TO RICHARDSON GROVE IS NEAR POSTMILE 1.73
 - 4 WORK IN LOCATION 2 WILL CONSIST OF GRADING OFF EXISTING DOW/C AND REPLACE IN KIND ON EXISTING ALIGNMENT.

DATE	BY	CHKD.	APP'D.
01	101	1.17.2	



Existing Typical Section

LOCATION 3, PM 2.04 TO 2.2



Proposed Typical Section

LOCATION 3, PM 2.10 TO 2.14



Proposed Typical Section

LOCATION 3, PM 2.04 TO 2.10



Proposed Typical Section

LOCATION 3, PM 2.14 TO 2.2

NOTES:

- ① ROADWAY WILL CONSIST OF NEW STRUCTURAL SECTION WHERE WIDENING WILL OCCUR. UNUSED PORTIONS OF EXISTING ROADWAY WILL BE REMOVED.

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN



NO SCALE

Figure 5 Typical Cross Section



No Build (No Action) Alternative

US Route 101 through Richardson Grove is a narrow, two-lane road on a non-standard alignment with 11 to 12 foot lanes with 0 to 4 foot shoulders and many tight curves. STAA trucks are restricted through Richardson Grove due to the physical constraints of the roadway. Non-STAA trucks traversing the Richardson Grove section of US Route 101 are often unable to stay within their lane. With the no build alternative the roadway improvements which could help lower the collision rate on this segment of US Route 101 would not occur. With the STAA restriction in place, many businesses in Humboldt and Del Norte counties would continue to be at an economic disadvantage. In addition, recreational vehicles that exceed the 65 foot overall length maximum would continue to be ticketed.

1.4.2. Alternatives Considered but Eliminated from Further Discussion Prior to Draft Environmental Document

As described in detail below, five major types of improvements, along with numerous sub alternatives within those improvements, were considered and evaluated at the early stages of the project but were eliminated. The different types of alternatives considered include: 1) highway improvement alternatives; 2) signalization alternatives; 3) time of day STAA truck travel restriction alternatives; 4) warning system alternatives; and 5) combination alternatives where variations within two different alternatives were combined.

Different variations within those alternatives were also evaluated and considered as explained below. However, after consideration of these alternatives, they were eliminated because they resulted in greater impacts than the preferred alternative, failed to fulfill the purpose and need of the project, or were infeasible due to engineering, financial, or other constraints.

Highway Improvement Alternatives

The following highway improvement alternatives were considered:

- Widen at selected locations (areas where STAA trucks off-track)
- Widen to provide a minimum shoulder width of four feet

- Realign short radius curves and widen to provide a minimum four foot shoulder width
- Bypass Alignment of Richardson Grove State Park
- Elevate the highway through Richardson Grove State Park

Widening at selected locations would require removal of several old growth redwood trees within Richardson Grove State Park since the STAA restrictions are due to the curves that result from the highway weaving between large trees.

Providing a minimum shoulder width of four feet would also require the removal of several old growth redwoods within the park as these trees are often growing in the shoulder area and abut the existing roadway pavement.

Realigning the curves to meet current design standards would require removal of old growth redwood trees as the curves are a result of missing the trees. Providing a wider shoulder would require removal of more old growth redwood trees.

Alternatives for a bypass of this section of US Route 101 were studied in 2001 (Refer to “Background” in Chapter 1). A bypass of the park was determined to be infeasible due to the substantial costs and environmental impacts. The surrounding steep terrain would mean any bypass would be required to have a substantial amount of excavation ranging from 5 to 68 million cubic yards and would necessitate cuts up to 600 feet in height. A tunnel bypass would generate substantial excess material to be disposed ranging from 1 to 55 million cubic yards. A new alignment would also bisect the park, separating visitor use areas. A bypass would also likely require the removal of several redwood trees including some old growth where it would connect to the existing highway. A bypass could also require an additional bridge over the South Fork Eel River.

Elevating the highway through the park would require more substantial excavation close to old growth redwood trees to construct the support for the roadway, thus having more potential to affect tree roots.

The alternatives to do selective widening, provide minimum four foot shoulders, realign curves to meet current design standards, and elevating the roadway were considered infeasible because they would all require removal or substantial impacts to old growth

redwood trees in Richardson Grove State Park. The bypass alternatives were considered infeasible due to the substantial cost and environmental impacts.

Signalization Alternatives

The following signalization alternatives were considered. Each of these alternatives assumes signals would restrict the current two way traffic configuration to one way, one-lane traffic for all day or portions of the day.

- Operate a signal system for one cycle per hour or twice an hour restricting two way traffic. STAA vehicles would be restricted access through this section of US Route 101 until the one way traffic cycle was in effect.
- Operate a signal system during night hours only and allow STAA access only when signal is in operation.
- Signalize, allowing alternating one-lane, one-way operation only 24 hours a day.
- Signalize, only stop non-peak direction, leaving the peak direction open to through travel.

A signal system would allow one way operation of this segment of US Route 101 to eliminate the problems associated with trucks and RVs being unable to navigate the segment and stay within their own lane. However, there are issues associated with attempting a one-way traffic signal at this location that make these alternatives infeasible. The five issues discussed below would be applicable to each of the four signalization options except the second option of operating the signal only during night. The issue with cycle length would not be as severe if the signal was only in operation at night since traffic should be less than that during the day.

Location -- The stop bars for the signal system would need to be located approximately one mile apart. The stop bar locations are based on the first available area for the signal equipment with the necessary sight distance for operation. Standard methods for traffic detection do not function over this distance. Therefore, the signal system would consist of two separate signal installations consisting of a cabinet, loops, poles, and associated hardware connected through an interconnect cable. The typical location of such a conduit

would be under the existing roadway. This trenching would add significant costs as well as potential redwood tree root concerns.

Fixed Time Operation -- Due to the signal being operated with separate controllers, the signals could not utilize traffic actuation, meaning that due to the issues described above under location, the signal could not be activated by the vehicle but would operate in a fixed fashion. Even if no vehicles were present in the opposing lane, signal would have to go through its whole cycle before allowing a vehicle to proceed. The signals would have to operate on a fixed cycle length, though the cycle length could vary with time-of-day based on historical traffic volumes. Fixed time operation is less efficient than actuated timing. Due to complaints about the waits at fixed time signals in the past, general policy is to require actuated signal systems.

Cycle Length -- Based on the time it takes for vehicles to travel through the limits of one-way traffic operation, the cycle length during minimal traffic flows would be 9-10 minutes. During the daily peak hour flows of 910 vehicles (Caltrans, 2005 Traffic Volumes), the theoretical cycle length would be 34 minutes. This would equate to an average delay of 17 minutes per vehicle. These cycle lengths and delay values are based on actuated signal operation. With fixed time operation, these delay times would increase substantially because a vehicle would have to wait for the whole cycle rather than being able to activate the signal to “go green” if no traffic is present in the opposing lane.

Traffic Queue -- There is potential for the traffic queue to reach 1-2 miles in length or more. The long queues may result in aggravated and impatient motorists as well as noncompliance. The queues could also occasionally block the access to business entrances just south of the project limits including French’s Camp, Legend of the Bigfoot, as well as the Cooks Valley Road intersection. The queues would back up into the four lane freeway sections. An example of this issue occurred during the mid 1990s when a project at Confusion Hill (a project on US Route 101 less than ten miles to the south) utilized a temporary one-way traffic signal system. The queues that resulted from this system extended for four miles on weekends back into the four lane section south of Leggett. Since that time it has been the policy of Caltrans to prohibit the use of temporary one-way traffic signals between Leggett

and Red Mountain Creek on US Route 101. The Richardson Grove section of US Route 101 displays similar traffic patterns to those at Confusion Hill, therefore, it would be expected that weekend traffic traveling through a one-way traffic signal system at Richardson Grove would create similarly untenable queues during the summer.

Traffic Safety -- Placing a traffic signal at Richardson Grove would likely cause an increase in the number of rear end accidents in this segment, and could lead to increased propensity for head-on collisions due to impatient motorists trying to pass where unsafe to do so and from motorists entering the highway from driveways within the one-way traffic control limits.

Nighttime Only Signal Operation -- In addition to the non-peak operational concerns mentioned above with the permanent one-way traffic signal systems, a nighttime only system creates its own concerns including:

- STAA vehicles waiting for the nighttime signal to begin operation would need a place to wait.
- Permanent striping of the one-way system would be precluded; consequently, compliance issues mentioned below may be greater than with a permanent signal configuration.
- Initially stopping both directions of traffic to start the one-way operation would likely require labor-intensive flaggers. Providing flaggers negates the lower cost of using a long-term nighttime only signal.
- Signal Heads not being used are required to be covered or turned away from facing traffic. This is another potential labor cost issue.

Compliance -- A major concern is the potential for motorists to ignore the signal system due to long waits at the red signal. These waits would be approximately 5 minutes with light traffic, and could approach 10 to 15 minutes at peak. As this is longer than most signal cycle times, some motorists could conclude that the system is inoperative and proceed against the light. To alleviate this problem, current policy would mandate that the Richardson Grove section of US Route 101 be restriped to a single lane configuration to ensure the public's

awareness of the one-way nature of this section. However, if the signal were only in operation during the evening hours, this precludes being able to restripe since normal two way traffic would continue during the day.

Safety--Another concern is the driveways and turnouts within the Richardson Grove section of US Route 101, especially the access to the park campground and Visitor Center. Ensuring that motorists do not enter US Route 101 from these driveways and turnouts and proceed against the green phase direction could be problematic.

Flagging -- Maintenance of some of the system components may require a maintenance flagging operation. A system failure would also require flagging operations. Controlling traffic with flaggers is labor intensive. The response time for flaggers during emergencies could take up to 2 hours. Further, system failures would be extremely difficult to detect. It is possible that it could take a few hours for a system failure to be reported and responded to by California Highway Patrol and added to that would be the response time for Caltrans maintenance staff to arrive to begin flagging.

These alternatives were considered infeasible due to the expected queuing (queues backing up into the four lane freeway sections) and substantial delay times (30 minutes or more) that would occur during times of high traffic volumes such as during the summer months. In addition, ensuring adequate safety such that no motorists would enter the highway from any of the access roads (including the park entrance) or pullouts and proceed against the green phase direction during one-way traffic control resulting in head-on collisions appears to be infeasible. The long queues would also affect response times for emergency vehicles.

The temporary signal that would be in effect during construction of the proposed project does not result in these issues for two key reasons; the signal during construction would not be in operation during the peak summer traffic months, and the portion of the roadway under one way traffic control with the signal is a very short section as opposed to the alternatives discussed above which would have a one way traffic control section of a half mile or more. The long segment being under permanent traffic control results in the safety issues because the segment under traffic control is not visible.

Time of Day STAA Truck Travel Restrictions

These alternatives considered restricting STAA trucks during certain times of the day:

- STAA truck access at night only
- Separate times for northbound and southbound STAA truck access (could be night only)

The issue with providing STAA access only at night is providing a location for the trucks to wait if they arrive when STAA access is restricted. It also does not alleviate the problem of off-tracking into the opposing lane.

Providing separate times for northbound and southbound STAA trucks would also require space for trucks to wait. It could also be confusing for motorists. This alternative would not alleviate the problem of STAA trucks off-tracking into the opposing lane of traffic. In addition, depending upon cycle lengths, it is unlikely that most long-haul truckers could time their deliveries to coincide with a limited access window. This would likely result in additional delays and increases to the haul costs.

These alternatives were considered infeasible because they did not fulfill the purpose and need for the project.

Warning Systems (e.g., warning signs, warning lights, reduced speed advisory)

The following alternatives considered utilizing some sort of warning system in to alert motorists that STAA vehicles were present.

- Wide / long truck warning signs (possibly with flashing lights)
- Truck detector (height, weight, length) activated warning system
- Reduced speed advisory
- Transponder operated truck warning system

Providing dynamic signing (including flashing lights or activated lights or message system) that warns motorists may increase motorists' awareness of oncoming vehicles that have less maneuverability and may reduce the severity of potential collisions, but would not justify

lifting the restriction for STAA vehicles because the roadway geometrics would not be corrected and off-tracking by trucks would still occur.

As with the alternative above, providing truck detector dynamic signing does not improve the roadway geometrics resulting in the off-tracking.

Reducing the speed would not correct the existing deficiencies in the roadway geometrics which result in STAA vehicles off-tracking over the center line and encroaching into the opposing lane. The degree of off-tracking for a given truck is determined by truck size and type and the curve dimensions of the road, not the truck speed. Speed reductions, dynamic signing (changeable message signs using radar which can tell motorists their speed), and warning systems are typically used to address existing safety concerns and not used to justify lifting a roadway restriction.

A transponder operated truck warning system may assist the operator of the STAA vehicle in being more aware of roadway obstacles. However, this alternative does not address the physical limitations of the roadway which is the underlying cause of the STAA restriction.

These alternatives were considered infeasible as they did not fulfill the purpose and need for the project.

Combination Alternatives

The following alternatives considered combining elements together from the alternatives discussed above:

- Signalization operating only during off-peak
- Highway improvement alternative (shoulder widening), combined with traffic calming (e.g., narrow lane width)
- Highway improvement alternative (selective shoulder widening) combined with truck warning signs
- Time of day truck restrictions in combination with warning system

Signalization, even if only in operation during off-peak hours still has the issues discussed previously with the cycle length and delay times, compliance, and safety concerns for traffic

entering the highway from access roads and proceeding against the one-way traffic resulting in head-on collisions. There is also the issue of creating a storage area where STAA vehicles could wait until the one-way traffic control was in effect, allowing the STAA to traverse through the park and initiating the one-way traffic control.

Shoulder widening on the existing roadway, whether it is continuous or at spot locations, would require the removal of old growth redwood trees. Narrowing lanes would not address the issue of off-tracking which currently exists. The trees currently abutting the highway already result in motorists perceiving the roadway as narrow.

Shoulder widening on the existing roadway in the areas where off-tracking is occurring would result in the removal of old growth redwoods. Installing warning signs would not result in geometric improvements, thus, it would not address the issue of off-tracking which currently exists.

Restricting STAA trucks to certain times of the day does not address the issue of off-tracking that currently exists. A warning system would not make geometric improvements to the highway and thus, would not address the off-tracking that currently exists.

The shoulder widening alternatives were considered infeasible because they would require removal of old growth redwoods. Signalizing during off peak hours was considered infeasible because of the operational and safety concerns. Restricting STAA trucks combined with a warning system does not fulfill the purpose and need for the project.

1.5 PERMITS AND APPROVALS NEEDED

The following permits, reviews, and approvals would be required for project construction:

Chapter 1 – Proposed Project

Agency	Permit/Approval	Status
United States Fish and Wildlife Service	Section 7 Consultation for Threatened and Endangered Species Review and Comment on 404 Permit	Biological Opinion by US Fish and Wildlife Service issued January 2009.
United States Army Corps of Engineers	Section 404 Permit for filling or dredging waters of the United States.	404 permit application submitted after final environmental document.
California Department of Fish and Game	1602 Agreement for Streambed Alteration Consistency Determination for marbled murrelet under Section 2080.1 of the Fish and Game Code	1602 permit application submitted after final environmental document. Consistency Determination was deemed by CDFG not to be necessary based on information in the Biological Opinion.
Regional Water Quality Control Board	401 Certification National Pollution Discharge Elimination System (NPDES)	Application for Section 401 Certification & Waste Discharge Requirements anticipated after final environmental document.
State Office of Historic Preservation	Section 106 Consultation for historic resources Review and Comment on 404 Permit	Concurrence on No Adverse Effect Determination with Standard Conditions In Appendix F.
California Department of Parks and Recreation	Section 4(f) Consultation for impacts to public parklands	Concurrence of the Programmatic Section 4(f) Evaluation provided in Appendix B.
National Park Service	Wild and Scenic River Act Consultation	Concurrence letter of the Wild and Scenic River evaluation is provided in Appendix G.

Chapter 2. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

As part of the scoping and environmental analysis conducted for the project, the following topics were considered but no adverse impacts were identified. Consequently, there is no further discussion regarding this issue in this document.

Floodplain - Proposed project is not in any 100-year floodplain, nor would it expose people to a seiche or mudflow. See Appendix H, Floodplain Evaluation Summary.

Farmland - No farmlands, or land under a Williamson Act contract would be affected by the project. No conversion of farmlands to non-agricultural use would occur. No timberland would be affected.

Odor - No objectionable odors affecting a substantial number of people would be created.

Wildlife and Fish Migration - Project would not substantially interfere with the movement of fish or wildlife species.

Habitat Conservation Plan - Project would not conflict with the provisions of any adopted Habitat Conservation Plan.

Geology - Project would not expose people or structures to earthquake faults, seismic ground shaking, or liquefaction. Project would not result in substantial soil erosion, nor involve septic systems. Project would not result in loss of a known mineral resource.

Wildfires - Project would not expose people to wildfires.

Land Use - Project would not conflict with any applicable land use plan or divide any established communities. Nor would the project expose people to any permanent substantial noise increase or excessive ground borne vibration.

Timberlands – Project will not affect any lands designated in a Timberland Production Zone.

Displacement - Project would not displace existing housing.

Public Services and Utilities - Project would not result in the need for any new or altered government or waste water treatment facilities, nor would it alter the service ratios for fire, police protection, or schools. Nor would the project result in any increased use of neighborhood or regional parks. Project does not require the construction or expansion of recreational facilities. The additional drainage improvements proposed will not cause any significant environmental effects.

Effects on People - Project will not result in substantial adverse effects on people.

2.1 HUMAN ENVIRONMENT

2.1.1. Land Use

2.1.1.1. Existing and Future Land Use

Humboldt County encompasses approximately 2.3 million acres, 80 percent of which is designated recreation areas and timberland. According to the Redwood Region Economic Development Commission, population density in Humboldt County is 35.4 persons per square mile, while the average density statewide is 217.2 persons per square mile. Nearly 60 percent of the County's population is located in the cities and unincorporated communities surrounding Humboldt Bay.

Most of the project lies within the boundaries of Richardson Grove State Park. The park contains campgrounds, roads and trails, a Visitor Center, and outbuildings. North of the park the land use in the project area is commercial and residential. Beyond the project limits, the area is mostly open land including some residential. The commercial and residential areas within and immediately north and south of the project area including the burl shops, restaurant, gas station, and the Singing Trees facility compose the community of Piercy. Garberville, an unincorporated community with a population of about 2000, is located approximately eight miles to the north.

In the Draft General Plan Updates, surrounding area outside the Park is primarily zoned as rural residential, timberland, and commercial. Benbow Lake State Recreation Area is located six miles to the north.

2.1.1.2. Consistency with Regional and Local Plans and Programs

The proposed improvement of US Route 101 is consistent with the 2008 Regional Transportation Plan for Humboldt County. The Transportation Plan identifies the Richardson Grove Operational Improvement Project in its Action Plan for Goods Movement.

The proposed improvement of US Route 101 is consistent with the Circulation Element of Humboldt County's General Plan. In the General Plan Update Draft it notes that improvements to the road alignment of US Route 101 through Richardson Grove may eliminate the constraint on large truck access which would reduce costs of shipping and may help local businesses become more profitable.

Between the community of Leggett and the Oregon border, US Route 101 has been identified as "eligible" for scenic highway status on the California Scenic Highway System. The proposed project would not affect this status.

2.1.1.3. Wild and Scenic Rivers

Regulatory Setting

Projects affecting Wild and Scenic Rivers are subject to the National Wild and Scenic Rivers Act (16 USC 1271) and the California Wild and Scenic Rivers Act (Pub. Res. Code sec. 5093.50 et seq.).

There are three possible types of Wild and Scenic Designations:

- Wild: undeveloped, with river access by trail only
- Scenic: undeveloped, with occasional river access by road
- Recreational: some development is allowed, with road access

Affected Environment

US Route 101 at this location parallels the South Fork Eel River, a state and federally designated Wild and Scenic River. The South Fork Eel River was designated Wild and Scenic in 1981 from Branscomb to the Eel River confluence. At this location, the Eel River is designated as “recreational” as is two thirds of the river system’s nearly 400 miles. This designation of “recreational” is used for those rivers or segments of rivers that are readily accessible by road or railroads that may have some development along their shorelines and that may have undergone some impoundment or diversion in the past.

The outstandingly remarkable values for the South Fork Eel River are listed as scenery and fish. The scenery value refers to landscape elements including vegetation which results in notable or exemplary visual features and/or attractions. The fish value refers to a river being nationally or regionally important in producing resident and/or anadromous fish, particularly federal or state listed species or providing exceptionally high quality habitat for fish, particularly federal or state listed species. The South Fork Eel River is noted for supporting important anadromous fish runs and extensive Chinook salmon habitat.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

The preferred alternative is not anticipated to have an adverse effect on the free-flowing characteristics of the river, nor alter the river’s designation of “recreational.” The project would not affect the visual characteristics of the river nor affect the water quality for fish. For the most part, within the project area, views of the roadway are screened from the river by trees and other vegetation. No work in or immediately adjacent to the river is proposed. Measures to protect water quality have been incorporated into the project. Refer to the sections on Water Quality and Wetlands and Other Waters later in this chapter.

The No Build Alternative would not change the status quo and would not have impacts on the factors that make the Eel River Wild and Scenic.

Consultation with the river’s responsible federal managing agency, the National Park Service, has been completed. See Appendix G for the Compliance with the California Wild and Scenic Rivers Act, which will be accomplished via the permitting process by California Department of Fish and Game.

2.1.1.4. Parks and Recreational Facilities

Affected Environment

Richardson Grove State Park is one of eight State Park units located in northern Mendocino/southern Humboldt County area. The park, established in 1922, is approximately 2000 acres and includes large redwood forest, the Eel River, oak woodlands, and grassy meadows. Amenities of the park include nine miles of hiking trails, a picnic area, year round camping, river access for swimming and fishing, and a variety of interpretative/educational programs offered during the summer in association with the campground and Visitor Center, such as evening campfire programs and guided nature hikes. The park has 170 family campsites in three campgrounds as well as a group campground and sites for cyclists/hikers. The river is a popular spot for swimming and relaxing in the summer and for salmon and steelhead fishing in the winter.

US Route 101 bisects the park and three of the campgrounds, Huckleberry, Madrone, and the Dawn Redwoods Group Campground, have campsites located adjacent to the highway (see Figure B1 in Appendix B). Portions of some of the trails are established immediately adjacent to the highway. In addition, the Visitor Center abuts the roadway and residential units for park staff are located adjacent to the highway in the northern portion of the park.

The General Development Plan for the park was approved in 1956. It shows the existing US Route 101 alignment as well as a “proposed” highway alignment to the west. This new alignment of US Route 101 depicted in the General Development Plan would not bypass the park, but would bisect the park behind the Madrone and Huckleberry campground loops. This new alignment was one of the alternatives studied in the 2001 Feasibility Study, which for this proposed project was eliminated due to substantial cost and environmental impacts.

There are three Memorial Groves included in the northern portion of the park, including Edward Jelenfy, Monna Jelenfy, and Zierott Walton Family groves. The Memorial Groves abut the highway and include developed areas such as the park residential units as well as natural vegetation.

For additional information, refer to Appendix B, Programmatic Section 4(f) Evaluation

Environmental Consequences

Impacts from the preferred alternative are discussed below.

Long term impacts resulting from the preferred alternative are minimal. Within the park, realigning the roadway requires some minor to moderate cuts and fills which would necessitate vegetation removal including some 30 trees of various species. Forty percent of the trees to be removed are tan oaks up to 12 inches at diameter breast height (dbh)⁵. The largest diameter trees proposed to be removed within the park include one tan oak at 24 inches dbh, and a big leaf maple and Douglas fir tree, both 22 inches at dbh. Twelve of the thirty trees to be removed are located at the cut at PM 1.36. Figure 6B shows the location of this cut. As can be seen in the figure, no old growth redwoods are present immediately adjacent to the area where the tree removal would occur. Another ten trees would be removed for the cut at the northern park boundary at PM 2.04. The area immediately north of this cut is shown in Figure 7B. As can be seen in the figure, no old growth redwoods are present immediately adjacent to area where the tree removal would occur. For a listing of the trees proposed for removal, refer to Table 8 and Appendix L.

Several trees abutting the existing highway, the majority being redwoods, would also be affected by construction activities occurring directly adjacent to the trees. In some cases, the curve improvements would be moving the roadbed slightly closer to the trees, in other instances, the roadbed would be realigned further away from the trees. Construction activities in close proximity to these trees could result in impacts to the root systems of these

⁵ Diameter breast height is defined as the diameter of the tree trunk (outside bark) at 4.5 feet above mean ground level (Department of Parks and Recreation, 2005)

trees. There would be both cut and fill activities occurring within the structural root zone⁶. The maximum depth of excavation would be approximately two feet and the maximum fill depth would be approximately three and a half feet. Trees that may be impacted by construction activities have been identified in Table 9 and Appendix L.

There would be impacts to an archaeological site resulting from vegetation removal and placing fill over a portion of the site. Refer to the section on Cultural Resources later in this chapter.

Drainage improvements within the park include three culvert replacements with new inlet structures, one culvert at PM 1.18 would have the existing headwall replaced with a drainage inlet, maintaining the existing pipe in use. A new down drain would be installed at one additional culvert at PM 1.78. None of the drainages with the culvert improvements contain fish.

To accommodate the proposed cuts and fills for the roadway, realignment shifts would require an additional 24,599 square feet (0.56 acre) to be added to the existing roadway easement that Caltrans has from the State park. The existing US Route 101 highway easement would be revised to include these new areas. A portion of the land within the existing easement, 24,625 square feet (0.56 acre), would be relinquished back to the park (i.e., removed from the current transportation easement.) This area to be transferred back to the park used to be the alignment of US Route 101, but several years ago the roadway was relocated to its current alignment and the roadbed removed. As part of the current proposed project, the area to be relinquished will be revegetated and returned to park jurisdiction. The Zierott Walton Family grove would be affected with area being added into the transportation easement and land being transferred from the existing easement and returned to the park.

Temporary construction impacts would include noise, lights, traffic delays, air quality impacts from equipment emissions, and interruptions to the view that would affect visitors utilizing the campground, trails, and Visitor Center, as well as motorists traveling through the park, and water quality impacts. Some construction activities might occur at night. The

⁶ Structural root zone is a circular area with the tree trunk at the center with a radius equal to three times the diameter of the tree trunk measured at 4.5 feet above the ground level (Department of Parks and Recreation, 2005)

maximum number of days with potential night construction work within the park is estimated to be twenty days. This would not be consecutive days but would occur periodically during the construction. The duration of construction for the overall project is estimated to be just under a year, however, the majority of work within the park is anticipated to occur spring and summer of 2010, but may change according to when the project goes out to bid. Access into the park and the park's maintenance yard would remain open during construction but there would be delays resulting from one way traffic control. Air quality effects from the equipment emissions would be localized and concentrated along the existing roadway. Views could be disrupted from the equipment and ground disturbance activities, but this disturbance should be localized and would occur along the roadway. If water is present in the drainages, it would be diverted during the culvert improvements. It is anticipated that the work for the culverts would each take approximately a day to complete.

To satisfy the requirement from the North Coast Regional Water Quality Control Board to improve water quality in the general area, the restroom adjacent to the Visitors Center will be removed. This restroom is already closed to the public due to the hazard of a redwood tree, which is currently leaning over the facility. The restroom facility and its foundation will be removed to help offset the increase of impervious surface that results with the project. As the restroom is not currently in use, there would not be an impact to park visitors.

The No Build Alternative would not result in vegetation removal or impacts on the cultural resource site. The culverts would likely have to be improved in the near future as an independent project as they deteriorate further.

Refer to Appendix B, Section 4(f) Evaluation.

Avoidance, Minimization and/or Mitigation Measures

Numerous special conditions have been incorporated into the project to minimize impacting the resources in the park. Refer to Appendix B for a listing of these measures.

2.1.2. Growth

Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969, require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations, 40 CFR 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment..."

Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the affected area's land use plans and growth management policies. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, and sewer service. A project that is not consistent with local land use plans could indirectly cause additional adverse environmental impacts and other public service impacts, sometimes referred to as "secondary impacts." A transportation improvement that is growth inducing must directly cause economic or population increases greater than what is planned by the local agency without the project. Thus, to assess whether a growth-inducing project would result in adverse secondary effects, it is important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

Affected Environment

Information for this section is contained in the report, "Community Impacts: Growth Analysis" (Caltrans, June 2008) and the report, "Realigning Highway 101 at Richardson Grove: The Economic Impact on Humboldt and Del Norte Counties" (Dr. David Gallo,

March 2008). In addition, information obtained by two surveys conducted by local agencies were also used. One internet survey was conducted by the Humboldt County Office of Economic Development and another survey was conducted by the Garberville/Redway Chamber of Commerce. These two surveys solicited information from local business owners regarding the impact of STAA restrictions to their businesses.

The total population of Humboldt County was 126,518 in 2000. In 2006 the population was estimated to be 131,361, a slight increase from the 2005 estimate of 131,022. A little more than a third of the County's population is found in just two cities, Eureka and Arcata. The County population grew by 6.2 percent between 1990 and 2000, which is less than half of the statewide average growth rate of 13.6 percent during the same time period. The County's population is projected to grow to approximately 141,100 by 2020, an 8.5 percent increase. This rate of population growth is still relatively slow compared to the State overall, which has a projected 25 percent increase in population during the same time period. Principal growth areas will continue to be the cities of Fortuna, Eureka, and Arcata, as well as the unincorporated communities of McKinleyville and Garberville and the area just outside Eureka where adequate services exist to accommodate the anticipated population growth.

Historically, lumber and wood products industry along with sport and commercial fishing dominated the County's resource-based economy. More recently, Humboldt County has been making the transition from a resource extraction-based economy to a more diversified economy shifting towards education, manufacturing, and tourism. Over the past twenty years there have been substantial job losses in the timber industry and commercial fishing due to a variety of factors. Timber production, which has been an important part of Humboldt County's economy in the past, remains strong, although it is not as dominant as it has been in the past.

The County experienced an expansion in economic activity from 1985 to 1990, then a slowdown in the early 1990s, which followed a similar pattern in the national recession during this same time period. Overall, total employment grew by 12.7 percent between 1990 and 2000. The strongest growth occurred in the Finance, Insurance, and Real Estate sector, followed by Services sector, Agriculture sector, and Construction and Mining sector.

Declines were experienced in the Transportation and Utilities sector, Wholesale Trade sector, and Manufacturing sector. The sectors with the highest number of jobs in 2000 were Government, Services, and Retail Trade.

In 2006, the total industry employment was estimated at 50,000. The sectors with the highest number of jobs included Government (27.6%), Trade, Transportation, and Utilities (19.8%), Educational and Health Services (11.6%), and Leisure and Hospitality (10.6%). The County unemployment rate in 2006 was 5.6 percent, while the statewide rate was 4.9 percent.

Between 2002 and 2006, it is estimated that employment in industry decreased by 200 jobs in the County. During this period, job losses occurring in manufacturing, educational and health services, professional and business services, and leisure and hospitality were offset somewhat by increases in other sectors, primarily construction and local government.

Humboldt County's labor force has been growing at a faster rate than the County population. This reflects a number of demographic trends such as the lowering of birthrate, the relative aging of the population, and increased labor force participation rates among adults.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

In 2008 the STAA restriction on US Route 101 north of Eureka was eliminated. Opening US Route 101 in southern Humboldt County to STAA trucks could have a positive impact on the attractiveness of Humboldt County, and to a lesser extent, Del Norte County to potential investors. As far back as 1989 in a report prepared for the Humboldt County Association of Governments (HCAOG) titled, "The Economic Impacts of Transportation Infrastructure Improvements in Humboldt County" it is noted that "the perception of improved transportation accessibility is key to business attraction, even if the current highway conditions do not, in reality, inhibit a potential business' ability to operate in the County." From this, one could conclude that even minor improvements to US Route 101 could potentially increase the attractiveness of areas served by the highway. Increasing the size of trucks on the primary north-south route between San Francisco Bay area and Humboldt County would remove a constraint on business attraction in Humboldt County. More

specifically, representatives of the local business community in Humboldt County have indicated that the lack of STAA truck access is a disadvantage to doing business.

More recently, The Comprehensive Economic Development Strategy for 1999/2000, prepared by the Humboldt County Office of Economic Development, identifies the constraints on truck lengths on the highways connecting Humboldt County to the interstate highway system as a limitation on the local shipping industry. The document focuses specifically on licensing fees, rather than on carrying capacity. The study concluded the carrying capacity in two 28-foot trailers is comparable to that in a single 53-foot trailer (the maximum length for STAA semi-trailers), but the licensing fees for a two-trailer system are approximately \$3000 more annually. Those costs are borne by local businesses and most likely passed onto their customers.

While lack of STAA truck access is not the only factor limiting economic development in the area, removing the restriction would likely have positive impacts to the businesses. Caltrans commissioned a study in 2008 in order to assess the disadvantages and potential growth impacts. The study, “Realigning Highway 101 at Richardson Grove: The Economic Impact on Humboldt and Del Norte Counties” (Dr. David Gallo, March 2008) found that transportation costs are currently higher within these counties due to STAA restrictions, however, the removal of these restrictions would not be expected to result in an increase in truck traffic, rather an increase in efficiency. The study cites information from business owners in the region who estimated a reduction in the number of annual truck trips of 12.3 percent if the STAA restrictions through Richardson Grove were lifted. The reduction in the number of trips due to increased efficiency would likely offset any increase in number of trips due to reduced transportation costs, with a result that eliminating STAA restrictions in southern Humboldt County would not significantly change truck traffic.

Another reason why STAA truck traffic is not likely to substantially increase in Humboldt County is due to the types of industry utilizing trucking as a primary goods movement method. A report prepared by Caltrans for the California Senate Transportation Committee titled, “A Study of Various Aspects of Tractor-Semi-trailer Productivity” (January 1986) examined the comparative economic value of STAA trucks’ greater volume. The study

analyzed the theory that longer trailers constituted a substantial economic advantage in terms of hauling volume. The study concluded that, when maximum weight is a criterion, the 48-foot semi-trailers allowed under the STAA regulations “are more productive only for high-cube (low density) freight. They are usable for heavier products but, for such goods, are no more productive than the shorter non-STAA trailers.” Meaning, that there is a maximum weight restriction for loads as well as maximum length of cabs and trailers, and that for heavy loads, the economic advantage for the longer vehicles is not present because STAA trucks are subject to the same weight restriction as non-STAA trucks.

Additionally, the total number of trucks utilizing US Route 101 would not be likely to change regardless of truck size for routine truck trips, regardless of the vehicle’s volume or the payload’s weight (for instance, weekly or biweekly deliveries from distribution centers to retail outlets). Increasingly, businesses rely upon products delivered to the customer “just in time” rather than warehoused items. Trips of this kind would not likely be affected by the proposed project. This is particularly true in light of economic trends. Truck transport has been declining nationwide with the rise in fuel prices and many firms are requiring full return payloads in order to maximize fuel economy⁷.

It is not likely that truck traffic would be diverted from the I-5 corridor to use US Route 101 if the STAA restriction is lifted. Diversion onto US Route 101 would depend upon it being economically feasible for the trucking companies to change their existing routes based upon fuel consumption and travel times. Since all the major coastal cities from southern California to northern Washington have readily available access to the I-5 and Route 99 corridors, which have straighter alignments and faster travel times, the opening of STAA access to US Route 101 through Richardson Grove is not expected to generate a substantial amount of diverted truck traffic. In addition, a traffic study performed for the projects to lift STAA restrictions on Routes 197 and 199 in Del Norte County⁸ also found that there was very little latent demand⁹ expected with the removal of the STAA restriction. That study estimated that

⁷ Caltrans, “Community Impacts: Growth Analysis,” June 2008

⁸ Fehr & Peers, “197/199 Safe STAA Access Project Traffic Analysis Report,” July 2009

⁹ Latent demand is traffic that would use a route, but cannot or does not for some reason; for example, STAA trucks that would shift onto US Route 101 if the restriction was removed.

providing STAA access could add about eight truck round trips per day on Routes 199 and 197.

While it does not appear likely that the volume of truck traffic would be substantially increased as a result of the project, it is anticipated that there would be economic benefits to Humboldt County. In response to an internet survey sponsored by Humboldt County Workforce Investment Board in 2008, approximately 39 businesses identified STAA restrictions as contributing to unnecessarily high operating costs. This voluntary, anonymous survey indicated that STAA restrictions increase local truck transportation costs for the identified industries by 16.9 percent, which the economic impact study performed by Dr. Gallo approximated amounting to \$5.98 million annually.

The economic costs of not constructing the proposed project would fall on businesses currently located in Humboldt County. However, economic activity and subsequent growth in Humboldt County faces a challenge in the form of distance to markets, with or without the proposed project. Growth within the county has fallen well within planned estimates, particularly within the immediate project area. For example, there were only 350 building permits for the entire county in 2007.

The inaccessibility of these areas to longer trucks is not the most important constraint on business development in this portion of northern California. According to the study prepared for Humboldt County Association of Governments, major constraints for development include distance from major population centers, lack of direct access to the Interstate road system, lack of a completed four lane north-south or east-west highway, limited air transportation service, unreliable and inadequate rail service, lack of industrial land in Eureka, shortage of labor in some occupations, lack of diversity of tourist attractions and visitor activities, and perception of the area by outsiders as remote (Cambridge Systematics, Inc., 1989). Removing the STAA restriction at Richardson Grove would not change any of these factors that influence growth in Humboldt County.

Growth in the area will be predominately influenced by land and housing costs, zoning, public sentiment, and the political climate of Humboldt County. There are numerous existing environmental, geographical, and political limitations to growth in Humboldt

County. The proposed project would reduce transportation costs and improve safety for both commercial and local traffic. To a limited extent, the project would make the communities in Humboldt County, and perhaps Del Norte County, more attractive as places in which to do business. However, the proposed project would not result in significant increases in overall economic productivity in the region. There is nothing to indicate that this project would result in increased, unplanned population growth, nor would there be any direct change to land use as a result of the realignment project. The proposed project is not expected to result in substantial change to the volume of truck traffic on US Route 101. Therefore, the proposed project, in and of itself, is not expected to induce unexpected growth or to have a direct growth-inducing effect in the region.

Further, land uses along the US Route 101 corridor have remained relatively stable over the past decade. Additional development along the US Route 101 corridor is restricted by local land use policies and zoning constraints, as well as be insufficient infrastructure and services. Governing jurisdictions have policies and zoning controls in place to protect the prevalent natural resource areas, open space, and agricultural uses along the corridor. It is unlikely that policy changes or demand for commercial or industrial development will result in changes in the intensity or types of land uses found along the US Route 101 corridor in the foreseeable future.

In conclusion, the proposed project, while potentially lifting one constraint to economic growth by feasibly reducing transportation costs, would not be likely to result in any businesses selecting Humboldt County as a place of business, given comparable choices of locations in other communities. However, for some businesses currently located in Humboldt County, the proposed project would be likely to substantially reduce shipping costs and increase profitability, as well as promoting retention of local businesses. Lifting the restrictions on STAA access at Richardson Grove would not result in a substantial increase in truck traffic or change the intensity or types of land use along the US Route 101 corridor.

The No Build Alternative would maintain the restrictions to STAA vehicle access. Businesses in Humboldt County would continue to experience an economic disadvantage as compared to the rest of the state.

2.1.3. Community Impacts

Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA), established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. The Federal Highway Administration in its implementation of NEPA [23 U.S.C. 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion and the availability of public facilities and services.

Under the California Environmental Quality Act, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

Affected Environment

Immediately to the south and north of the proposed project area are commercial businesses including burl shops, gas station, and restaurants as well as rural residential land uses. Within the project limits there is the Richardson Grove State Park, the Singing Trees Recovery Center (for alcohol and drug abuse recovery) and a few private residences as well as residences for park staff. This area is considered part of Piercy, a small unincorporated community that includes the residences and businesses found within the project area and the immediate environs.

No minority or low-income populations have been identified that would be adversely affected by the proposed project. Therefore, this project is not subject to the provisions of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

Singing Trees Recovery Center - Impacts would result primarily from temporary construction impacts. Delays would result from both the temporary signal restricting traffic to one-way to accommodate construction of the proposed retaining wall as well as from delays resulting from one-way traffic staging done by flaggers. The one-way signal would likely be in operation for about four to six months depending upon weather. One-way traffic staging would be in place periodically throughout the construction. Delays from both the signal and the one-way traffic staging could cause queues to develop that might affect ingress and egress to and from the Center. Delays at the signal and from one-way traffic staging are anticipated to be a maximum of 15 minutes and average about 5 to 10 minutes. Access to the Center will be delineated with cones in an attempt to ensure that vehicles in any queues do not block access during construction. Access to the Center would be maintained during construction.

Both the private residents and the clients of the Singing Trees Recovery Center would be affected by noise from the construction activities as well as from traffic idling at the signal. In addition, it is possible that there would be some night work involved with construction of the retaining wall.

There would also be some long term benefits to the Center as a result of the proposed project. The improved sight distance and wider shoulders at the Singing Trees facility should improve access into this facility. Currently, the staff and owners of the Singing Trees facility do not make left turns into the facility but go up to the park entrance to turn around, in order to approach the facility from the south and make a right turn into the business.

State Park and park staff residences - Impacts would result primarily from temporary construction impacts. Delays would result from both the temporary signal restricting traffic to one-way to accommodate construction of the proposed retaining wall as well as from delays resulting from one-way traffic staging done by flaggers. The one-way signal would likely be in operation for about four to six months depending upon weather and would have more of an effect on southbound motorists trying to access the park. One-way traffic staging would be in place periodically throughout the project limits during construction. Delays from both the signal and the one-way traffic staging could cause queues to develop that might affect ingress and egress to and from the park. Delays at the signal and from one-way traffic staging are anticipated to be a maximum of 15 minutes. Flaggers will be utilized at the park entrance when it is in the work area or within the traffic queues. Access to other park roads will be delineated with cones in an attempt to ensure that vehicles in any queues do not block access during construction.

Both the campground users and the park staff residents would be affected by noise from construction, including any night construction. The park staff residences located at the northern perimeter of the park could also be affected by noise from idling traffic at the signal.

Residences - Impacts would result primarily from temporary construction impacts. Delays would result from both the temporary signal restricting traffic to one-way to accommodate construction of the proposed retaining wall as well as from delays resulting from one-way traffic staging done by flaggers. The one-way signal would likely be in operation for about four to six months depending upon weather. One-way traffic staging would be in place periodically throughout the construction. Delays from both the signal and the one-way traffic staging could cause queues to develop that might affect ingress and egress to and from the residences. Delays at the signal and from one-way traffic staging are anticipated to be a maximum of 15 minutes. Access to the Overpacks Resort facility will be delineated with cones in an attempt to ensure that vehicles in any queues do not block access during construction. Access to the residences would be maintained during construction.

The residents would be affected by noise and night work from both the construction activities as well as from traffic idling at the signal.

Temporary and permanent right of way will be acquired from a private residence and the Singing Trees Recovery Center to construct the retaining wall. There would be some long term benefits that result from the project. The wider shoulders and improved sight distance should slightly improve access to the Overpacks Resort facility.

Commercial areas north and south of project limits- Impacts would result primarily from temporary construction impacts. Delays would result from both the temporary signal restricting traffic to one-way to accommodate construction of the proposed retaining wall as well as from delays resulting from one-way traffic staging done by flaggers. The one-way signal would likely be in operation for about six months depending upon weather. One-way traffic staging would be in place periodically throughout the construction. Delays from both the signal and the one-way traffic staging could cause queues to develop that might affect ingress and egress to and from the businesses outside the project limits. Delays at the signal and from one-way traffic staging are anticipated to be a maximum of 15 minutes. Access to the businesses will be delineated with cones in an attempt to ensure that vehicles in any queues do not block access during construction.

Trucking companies currently providing California Legal trucks (non-STAA) would likely experience a decrease in demand for these vehicles.

Impacts for above the road retaining wall discussed in the draft environmental document would have required temporary and permanent right of way to be acquired from the two residential properties for the cut slopes that were needed to widen the roadway to provide the four foot shoulders at the northern portion of the proposed project. Power to one of the residences would have needed to be turned off for one to three days during construction of the retaining wall. The preferred alternative does not require the additional temporary and permanent right of way or the temporary power outage.

The No Build Alternative would have minimum impacts on the businesses and residences within the project limits. The demand for non-STAA vehicles would remain the same.

Avoidance, Minimization and/or Mitigation Measures

Access to residences and businesses will be maintained at all times. If work or traffic queues extend through a driveway, additional traffic control will be required.

A meeting with business owners prior to construction will occur to discuss anticipated construction impacts and staging of the project. A communication plan will be developed to continuously update local businesses as to construction activities so that businesses can have relevant information to base operational decisions on. Part of the communication plan will be to provide business owners with a Caltrans contact person to report problems so that issues can be resolved in a timely manner.

2.1.4. Utilities/Emergency Services

Affected Environment

Within the project limits the only utility within the US Route 101 right of way is PG & E. Additionally, there is a water line servicing one residence that goes through the highway culvert at PM 2.10.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

The preferred alternative would not affect any utilities except for connecting power for the temporary signal system and flashing warning beacons. Construction of the retaining wall requires the installation of a temporary signal system to accommodate one way traffic about 100 feet away from the location of the wall to the north and south. Three additional flashing warning beacons for each lane would be located at approximately 200 foot intervals in advance of the signals to warn motorists of the approaching signal. Each of the beacons would be connected to a power source via a buried cable that would be placed in a shallow six-inch wide by six-inch deep trench within the roadway pavement or roadway shoulder.

The private water line that currently goes through the highway culvert will be affected when the culvert is replaced. The water line will be relocated into a conduit and placed adjacent to the new culvert as it is installed. The private residence that the water line services may not

have access to the water during the installation of the new culvert and conduit. This interruption in service is estimated to not exceed one day.

Emergency service providers such as the Sheriff Department, ambulances, Fire and Rescue, Piercy Volunteer Fire Department, and California Highway Patrol could be affected during construction caused by the one way traffic control or short term road closures. However, emergency service vehicles will be given priority clearance through the work zone when responding to calls.

The No Build Alternative would have no impact on the existing utilities and emergency services.

Avoidance, Minimization and/or Mitigation Measures

Any emergency service agency whose ability to respond to incidents will be affected by any lane closure will be notified prior to that closure. The contractor will be required to prepare a contingency plan for reopening closures to public traffic due to unanticipated delays, and emergencies.

2.1.5. Traffic and Transportation/Pedestrian and Bicycle Facilities

The traffic section discusses the project's impacts on traffic and circulation, both during construction (construction impacts) and after completion of the project (long-term impacts).

Note: Recreational trails are covered under the Parks and Recreation section of the document.

Regulatory Setting

The Department, as assigned by FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

The Department is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

Affected Environment

The current roadway geometrics do not meet current design standards for design speed, curve radii, shoulder width, super-elevation rates, stopping sight and corner sight distance, distance to a fixed object, steepness of side slopes, and alignment consistency.

Humboldt County has truck restrictions on each of the State highways serving the county. The primary routes into and out of the county used by commercial trucks are US Route 101 for north/south traffic and SR 299 for east/west traffic. Advisory routes at two locations limit the king-pin-to-rear-axle (KPRA) length in and out of the Humboldt Bay region to 32 feet or less: on SR 299 to the east at Buckhorn Summit and on US 101 at Richardson Grove (See Figure 3). These highways provide adequate facilities and level of service for their operations, however, the narrow, windy sections of these highways that prevent larger trailers from entering the county increase shipping costs for both imported and exported goods. The Humboldt County Office of Economic Development, in the report, “The Comprehensive Economic Development Strategy for 1999/2000,” identifies the constraints on truck lengths on the highways connecting Humboldt County to the interstate highway system as a limitation on the local shipping industry. This report focuses specifically on licensing fees, rather than on carrying capacity. The study concluded the carrying capacity in two 28-foot trailers is comparable to that in a single 53-foot trailer, but the licensing fees for a two-trailer system are approximately \$3,000 more annually. Those costs are borne by local businesses and most likely passed on to their customers.

According to the 2008 Humboldt County Regional Transportation Plan (RTP), a major portion of truck traffic in the County is from timber industry operations. Representatives from the timber industry have indicated that using longer trailers would help cut transportation costs. Trucking companies operating trucks with two 28-foot trailers are carrying about the same capacity as a 53-foot trailer, but their operating costs are much

higher. The RTP goes further to state that the truck length restrictions and backhaul opportunities in Humboldt County are preventing businesses from being profitable and competitive with other similar business along the west coast. Stakeholders have noted that truck length restrictions effectively result in an increase in the number of trucks they are forced to run in and out of the County.

The railroad line from Sonoma County to the city of Eureka has not been in operation since 1998, when a Federal Railroad Administration (FRA) Emergency Order mandated the cessation of all railroad operations on this line due to damages accrued during storm events. When in operation, the railroad was an important transportation link to markets and distribution systems south of Humboldt County. Timber, lumber, and pulp producers utilized rail transportation in the past as a supplement to trucking. Additionally, some of the products used in paper manufacturing have been imported to Humboldt County via the rail line. When in operation, freight service was provided five days a week.

The North Coast Railroad Authority (NCRA) prepared a “Strategic Plan” in April 2001 projecting that the railroad would begin collecting revenues from the provision of freight and excursion services in 2008. Currently, NCRA is not operating any trains on the rail line. NCRA anticipates beginning freight service between Willits and the San Francisco Bay Area beginning in 2010, however, currently; there is no estimated date for resumption of train service north of Willits.

This section of US Route 101 is part of the Pacific Coast Bike Route. However, US Route 101 within the project limits is currently on nonstandard alignment with generally 0 to 2 foot shoulders. Due to the narrow lanes and shoulders, lack of sight distance due to the curvilinear roadway and numerous trees growing in or just off the shoulder, bicyclist and pedestrian use through the park is compromised. In addition, larger vehicles often utilize the shoulders through the tight turns in the park and leaf debris (duff) generally covers most of the paved shoulders in the park making use by bicyclists and pedestrians less desirable.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

During construction of the retaining wall there would be a period of approximately four to six months where a one-way signal system would be in place. During paving activities and some cut and fill activities one-way traffic staging would also be in place. Delay times would typically average five to ten minutes up to a maximum of fifteen minutes under normal circumstances.

Some of the issues identified under the signalization alternatives considered but eliminated from further discussion would be present for this temporary signal as well. The major difference between the temporary signal and those described previously, is the work area is short enough (a few hundred yards) that an actuated signal can be used rather than the fixed time cycle that would be required to be utilized if the whole one mile length of the project is being controlled by the signal. There would still be delays and resulting traffic queues, but with the much shortened length of roadway under signal control, it would take vehicles much less time to get through the area under one-way traffic control and the delays and queues would be much shorter. There would still be the potential for increased number of rear end collisions similar to the other signalization alternatives as well. However, the park entrance and other park access roads would not be within the area of the one-way traffic control of the signal. There is the potential that the driveway access of the Singing Trees Recovery Center and the Overpacks Resort would still be within the one-way controlled traffic area of the signal.

Outside the park boundaries, the proposed shoulder widening should provide some improvement for bicyclists and pedestrians. Due to the presence of sensitive resources immediately adjacent to the highway, widening the road to provide four foot shoulders within the park is not being proposed. The project would not appreciably improve the existing conditions for bicyclists and pedestrians; neither would it decrease the conditions that currently exist.

In the fall of 2008, Caltrans reduced the posted speed limit of 40 mph through Richardson Grove to 35 mph in an independent action from the proposed operational improvement project. The limits of the speed reduction extend from PM 1.15 to PM 2.30 which is just north of Hartsook Inn to just north of the Singing Trees Recovery facility.

Caltrans has proposed several improvements on Routes 197 and 199 in Del Norte County that, if implemented, would lift restrictions for STAA access on these routes. The environmental studies for these improvements are currently ongoing. Caltrans has also proposed improvement to Route 299 at Buckhorn.

The No Build Alternative would have minimal impact on the existing transportation system.

Avoidance, Minimization and/or Mitigation Measures

In order to ensure that impact to the traffic circulation is minimized during construction, the following measures listed below will be in place.

The full width of the traveled way shall be open for use by the public traffic on designated legal holidays, the day preceding designated legal holidays, and when construction operations are not actively in progress. If a legal holiday falls on a Monday, the full width of the traveled way except for northerly portion of the project limits with the signal and one-way traffic (segment 3 as described in the “Alternatives” section), shall be open from the preceding Friday through the holiday.

The full width of the traveled way, except for segment 3 when the signal and one-way traffic is in place, shall be open for use by the public traffic from the proceeding Friday to the following Monday for the following events:

- Annual Redwood Run and Music Festival held the second weekend in June
- Fortuna Redwood AutoXpo the last weekend in July
- Annual Reggae on the River and/or Reggae Rising Festival held the first weekend in August (for this event lane closure restrictions are in effect from Thursday to Monday)
- Annual Earthdance Festival held the third weekend in September.

During one-way traffic control, bicycles and pedestrians shall be directed through the work area using a pilot vehicle, wherever a 12 foot - wide traveled lane with a 4 foot contiguous paved shoulder is not available. Signage shall be used at each end of the construction area to

alert bicyclists and pedestrians of the requirement to obtain instruction from designated traffic control personnel. Queue times shall not be longer than 15 minutes.

Access to side roads and residences will be maintained at all times. When work or traffic queues extend through an intersection, additional traffic control will be required at the intersection.

Additional flaggers will be used when the park entrance is within the work area or within the traffic queue.

Work shall be coordinated with the local busing system (including school buses and public systems) to minimize impact on their bus schedules.

Bicycles shall be accommodated through the work zone during construction.

Caltrans shall provide information to residents and businesses before and during project work that may represent a disruption to commerce and travel surrounding the zone of construction.

2.1.6. Visual/Aesthetics

Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. To further emphasize this point, the Federal Highway administration in its implementation of NEPA [23 U.S.C. 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state “with...enjoyment of *aesthetic*, natural, scenic and historic environmental qualities.” [CA Public Resources Code Section 21001(b)]

Affected Environment

A Visual Impact Assessment (Caltrans, May 2008) was prepared for the proposed project. The setting of the proposed project is as follows. US Route 101 is located on the top of a bluff overlooking the South Fork Eel River to the northeast and at the base of a mountain ridge to the southwest. The Eel River has been designated as a Wild and Scenic River at the State and Federal level. Views of the Eel River are only available at the northerly limits of the project area due to the densely forested areas between the River and the highway. From the town of Leggett south of the project area to the Oregon border, US Route 101 is identified as ‘Eligible’ for scenic highway status on the California Scenic Highway System, although it is not officially designated as such. US Route 101 within the project limits traverses through two visually distinct vegetation communities: old growth redwood forest and conifer/oak woodlands which are part of the Redwood Series (Sawyer and Keeler-Wolf). Within the project limits, the redwood forest community is found within Richardson Grove State Park and the conifer/oak woodland community is present in the northerly portion of the project, primarily found outside the park boundary (See Figures 6 and 7). The views of native vegetation throughout the project limits is interspersed with man-made structures abutting the highway such as the Visitor Center and park staff residences within the park and the Singing Trees Recovery Center and private residences outside the park.

The viewer groups within the park include motorists, park visitors, and park staff. The viewer groups north of the park within the project limits include motorist, residents, and the staff and guests of the Singing Trees facility. Only the Singing Trees facilities are at grade with the road. Views from the residences upslope and downslope of the road are screened by vegetation. The views within the park are the most sensitive, particularly in those areas where the old growth trees are adjacent to the roadway.

The highway through the park is narrow and tightly winds through the redwood forest. In several places large redwood trees over twenty feet in diameter are located immediately adjacent to the edge of the highway and draw the attention of visitors who travel this section of US Route 101. Small forest canopy openings provide partial sunlight that illuminate the dark, dense forest floor. (See Figure 7)

Environmental Consequences

Impacts from the preferred alternative are discussed below.

Of the overall one mile length of the project limits, changes to the existing alignment are proposed for slightly more than one half and would occur between PM 1.14 / 1.70 (segment 1) and PM 2.04/ 2.20 (segment 3). A majority of the proposed improvements consist of subtle realignments of the roadway to improve curve radii. The roadway alignment is proposed to be shifted 1 to 6 feet from the existing centerline in most cases, with an overall average of 2 feet. The maximum realignment would shift the centerline 17 feet.

Segment 1: Existing vegetation located where cut and fill slopes are proposed would be removed prior to grading. Impacts to the existing visual setting due to vegetation removal would be low and these impacts would diminish even further over time as revegetation matures and natural forest regeneration occurs. Between PM 1.33 and PM 1.35 the highway alignment would be shifted 10 feet to the west avoiding the cluster of large redwood trees. The dominant visual resource in this area is the dense stand of redwoods. Thus, the vegetation removal on the cut slope would not be as noticeable. Between PM 1.35 and PM 1.41 the proposed realignment would closely mimic the original alignment. Although the fill requires some tree removal, the dense redwood forest would still be the dominant visual feature of this section of the roadway.

The views of the project area by park users would primarily occur adjacent to the Visitor Center, campground areas, and from portions of two trails that run parallel to the highway. Much of the vegetation removal proposed in Segment 1 would only be visible from a portion of the trail.

Segment 2: The only work proposed is placing new asphalt paving, restriping, and extending an existing berm to divert water to a down drain to connect to the culvert at PM 1.78. No other activities such as widening, shoulders, or new cut/fill slopes are proposed for this segment, thus no existing vegetation would be removed. There would be no impacts to the existing visual setting in this area.

Segment 3: The proposed cut in this segment, occurring between PM 2.04 and PM 2.10, would shift the alignment 10 feet into an existing cut slope on the west. The surface of the proposed cut would rise 15 feet uphill at its highest point from the roadway and would be 300 feet in length. The proposed top of cut would be 25 feet from the nearest of the two cabins (park residences) located at the top of the slope (Figure 7B). The cut would require removing all the vegetation on the proposed cut slope including trees, shrubs, and sparse ground cover. This area is south of the Overpacks Grove Resort driveway and marks the transition between the dense redwood viewscape prevalent in Richardson Grove State Park to the south and the commercial and residential landscape at this location and extending to the north. The loss of vegetation would cause the cabin structures at the top of the slope to be more clearly visible from the roadway; however, the Singing Trees facility directly abuts the highway at this location so the natural visual setting is already compromised. Although there are some large redwoods within the Singing Trees Recovery Center property, most of the large redwoods in this area were cut over the past century.

While a portion of this cut occurs within the park requiring about ten trees to be removed from the park, the use in this area of the park is residences for park staff. The vegetation removal would not likely be viewed by park visitors except those traveling along the highway.

Construction of a 200 foot long retaining wall would occur below the roadway (See Figure 8B). The wall, a combination of soldier pile tie back wall with timber lagging and a crib retaining wall, would begin at the Singing Trees Center and extend north from PM 2.10 to PM 2.15. This wall is a modification of the wall proposed in the draft environmental document. The current wall is shorter and on the east side of the highway as compared to the previous wall which was on the west side of the highway. The current wall is also constructed below the roadway, which results in it being much less visible to the motorists and requires approximately thirty less trees being removed. The most visible element of the wall would be the barrier rail. The highway would be widened to the east about five to nine feet for wider shoulders. Since the wall is constructed below the roadway, what is visible to the motorist would be a concrete Type 80 (refer to simulation in Appendix K) safety barrier with bicycle rail on top which extends approximately 180 feet in length and rises 54 inches in

height. To the west, a minor amount of cut would be required at the base of the existing cut slope. The below the road wall would be visible from the private residence at the base of the slope just north of the Singing Trees facility. Construction of the wall would require the removal of five trees.

The wall would not be visible from the South Fork Eel River due to the trees on the slope which screen the highway at this location.

There would be temporary visual impacts from the temporary signal system and flashing warning beacons. The signal system and warning beacons would only be in operation during the wall construction to accommodate the one way traffic.

The No Build Alternative would not result in any impacts to the present visual setting.

Avoidance, Minimization, and/or Mitigation Measures

Disturbed areas would be revegetated. The revegetation goal is to establish self-sustaining native vegetation cover in all strata similar to the pre-project conditions in the impacted areas. The revegetation activities will consist of application of local native mulch for erosion control on disturbed soils and locally appropriate container and/or salvaged native plants. Within the park, trees that are removed would be chipped to provide the local native mulch in addition to any salvaged duff.

The top 4 inches of duff (redwood tree and Douglas fir leaf litter) shall be removed, stored at a staging area location and subsequently spread out on exposed disturbed soils within the park boundary. Spreading the duff on the disturbed slopes would mask visual cues that recent construction activities have occurred.

Ferns and other shrubs will be salvaged when possible and replanted onsite.

Figure 6A Photo of US Route 101



View of US Route 101- Redwood forest within Richardson Grove State Park at PM 1.37 looking south. This is the location of one of the alignment shifts. The center line would be shifted to the left. To the right of the photo is the proposed cut bank shown in Figure 6B.

Figure 6B Photo of US Route 101



View of US Route 101 at PM 1.36 within Richardson Grove State Park looking south showing big leaf maple, Douglas fir, and tan oak. This cut bank is the location of one of the proposed cuts. Note there are no old growth redwoods in or immediately adjacent where the tree removal is proposed.

Figure 7A Photo of US Route 101 in Richardson Grove State Park



View of US Route 101 at PM 1.50 looking south within Richardson Grove State Park in the vicinity of the Visitor's Center showing large redwoods abutting highway. No trees are proposed for removal at this location.

Figure 7B Photo of US Route 101 just north of Richardson Grove State Park



US Route 101 at PM 2.06- View of cut bank looking south towards the park at the location of one of the proposed cuts just north of the park boundary and across from the Singing Trees Recovery Center.

Figure 8A Above the Road Retaining Wall found on US Route 101 in Del Norte County Similar to the Wall Proposed in the Draft Environmental Document



This is a view of a similar design of soldier pile retaining wall with timber lagging as proposed in the draft environmental document. In the final environmental document a less visibly intrusive wall was developed. (See Figure 6B) The wall above is located on US Route 101 in Del Norte Redwoods State Park and is similar in height and

Figure 8B Similar Type Below the Road Retaining Wall found on US Route 101 in Mendocino County as Proposed in the Preferred Alternative



This is a view of a similar design of soldier pile retaining wall with timber lagging and barrier rail as proposed for the preferred alternative. The wall above is located north of Route 1/101 intersection at Leggett.

2.1.7. Cultural Resources

Regulatory Setting

“Cultural resources” as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way.

Affected Environment

A Historic Property Survey Report (HPSR) (Caltrans, February 2008) was prepared for this project that summarizes the results of the record search, the archaeological field survey, the historic architectural evaluation, the Extended Phase I Investigation, and the Native American consultation efforts. This report considered potential direct and indirect impacts to cultural resources including historic resources, prehistoric resources, and traditional cultural properties. The Area of Potential Effects (APE) for the proposed project includes the existing and proposed right of way and areas under existing easement, areas of new permanent easement, and areas of temporary easement necessary for the proposed construction of this project.

The Native American Heritage Commission was contacted to see if they had information in the Sacred Land File within the proposed project limits. The Commission responded that there were no known resources at the project location. The record search obtained from the North Coastal Information Center revealed that CA-Hum-240 was the nearest known archaeological site in the project vicinity, and is located outside the APE. This site consists of a lithic scatter¹⁰ and a habitation site with house pits. No surface sign of this site appears to remain. An archaeological survey and Extended Phase I Survey¹¹ was performed to determine whether either site CA-Hum-240 or any other sites may extend into the project study area.

The Extended Phase I excavation occurred in areas of the APE where it was determined there was the highest probability of locating subsurface cultural resources. The Extended Phase I excavation included a total of 20-30 shovel probes, each of which measured approximately 1.6 by 3.3 feet and up to a depth of 2 feet. The excavation revealed one new archaeological site, P-12 001824, within the APE. This site proved to be a shallow, dispersed lithic scatter that appears to date to 3,500 – 1,500 Before Present. This site was found to extend beyond the APE and the Extended Phase I investigation only looked at the portion of the site that had the potential to be directly impacted by the proposed project. The portion of P-12 001824 that is located within the area to be disturbed by the proposed project was determined ineligible for the National Register of Historic Places and the California Register of Historical Resources. The California Office of Historic Preservation has concurred with this determination.

Structures within the APE were considered for their potential to be historically significant. The only bridge on US Route 101 in the project area (Richardson Grove Undercrossing, Bridge No. 04-0055) was found to have been determined ineligible for listing in the National Register of Historic Places previously based on the Statewide Historic Bridge Inventory Update of 2003-2006. There are structures adjacent to the highway both within and outside of the park. The park facilities include a mixture of altered historic buildings and buildings constructed within the last fifty years and buildings outside the park are either clearly less than fifty years old or are more than fifty years old, but have been extensively altered. Most

¹⁰ stone tools and chipped stone debris

¹¹ limited subsurface survey using shovel probes

of these buildings near the highway along the length of the project area can be excluded from the APE since the proposed work would not affect them or they have been substantially altered from their original appearance and are not eligible for listing in the National Register of Historic Places. One park structure was included in the APE, the restroom located adjacent to the Visitor Center, because this structure is proposed for demolition.

The present highway does not have the same characteristics as the original highway. The original plans for the highway are dated 1914 and show the highway built to a width of 18 feet. The most recent plans, dated 1996, show a pavement width of 21 to 36 feet, in addition to shoulders in some areas of up to five feet. Although the roadway is narrower than adjacent segments of US Route 101 to the north and south, it has the appearance of a modern state highway. Thus, the highway itself does not have historic qualities that would warrant its evaluation as a potential historic road.

The state park buildings are a mixture of older and more recent buildings that do not appear to constitute a historic district or historic landscape. What distinguishes this segment of US Route 101 from other highways is the way in which the roadway is threaded through the redwood forest, with trees very close to the edge of the pavement. The distinctive aesthetic experience of driving along this segment of US Route 101 is important to the area residents and travelers; however, it is an issue of aesthetic values of a modern highway through a natural landscape rather than one of historic preservation.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

No sites listed on, or eligible for listing in the National Register of Historic Places or the California Register of Historical Resources would be affected by the proposed project. The California Office of Historic Preservation has concurred with this determination (see Appendix F). The portion of P-12 001824 lying immediately beyond the area to be affected by construction was not evaluated and thus, could be determined eligible for listing at a future date. The restroom proposed for removal adjacent to the Visitor Center was determined not to be eligible.

Impacts to the ineligible portion of site P-12 001824 within the project limits would be as a result of vegetation removal and forest floor duff removal. These activities are required to place fill material at this location to support the road realignment. The Intertribal Sinkyone Wilderness Council considers all native archaeological sites associated with Sinkyone culture important and worthy of protection. As a result of consultation efforts with the Council, several protection measures will be incorporated into the construction work.

In addition to the California Office of Historic Preservation and the Native American Heritage Commission, consultation with the following Native American groups occurred: Intertribal Sinkyone Wilderness Council, Bear River Band of Rohnerville Rancheria, Round Valley Indian Tribes, Eel River Nation of Sovereign Wailaki, Table Bluff Wiyot Tribe, Coyote Valley Rancheria, Scotts Valley Band of Pomo Indians, Sherwood Valley Rancheria, Cahto Tribe of Laytonville Rancheria, Robinson Rancheria, Guideville Rancheria, Pinoleville Rancheria, and the Potter Valley Tribe. The only opposition to the proposed project was given by the Intertribal Sinkyone Wilderness Council. Their concerns, as stated in their letter, include impacts to old growth trees and the adverse effects to biological resources and aesthetics of the park. The letter stated that they support the No Build alternative along with traffic slowing measures.

Additional consultation regarding potential impacts to cultural resources within Richardson Grove State Park occurred with Greg Collins, State Park archaeologist, Roger Goddard, State Park Landscape Architect, and Jan Wooley, State Park architectural historian.

The proposed project will not use a Section 4(f) historic property resource. For impacts to Section 4(f) resources, refer to Appendix B.

The No Build Alternative would result in no impacts to the ineligible portion of site P-12 001824.

Avoidance, Minimization, and/or Mitigation Measures

The portion of P-12 001824 that is located outside of the area to be disturbed during construction shall be considered eligible for the National Register under Criterion D for the purposes of this project without conducting subsurface testing. An Environmentally

Sensitive Area (ESA) will be established to protect this portion of the site from potential project impacts. Temporary plastic fencing will be installed around the ESA at least one week prior to initiating ground disturbing construction work and the Caltrans archaeologist will be present to monitor the fence installation.

During all ground disturbing activities associated with this project, a Caltrans archaeologist and Native American monitor will be present.

As a result of consultation with the Intertribal Sinkyone Wilderness Council, protection measures will be put in place to limit the construction impacts to the ineligible portion of site P-12 001824. These methods to limit the construction impacts have been agreed to by both the Executive Director and Chairperson of the Intertribal Sinkyone Wilderness Council.

- The ground surface will be raked by hand to remove the thin layer of leaves and redwood duff.
- Vegetation removal would occur by hand, cutting the few trees and brush to ground level.
- Stumps and root wads would be left in place.
- Once vegetation and surface material are removed, filter fabric will be rolled out by hand onto the cleared area and staked to the ground.
- After the filter fabric is in place, the fill material would be placed onto it from outside the site area and it would be spread out by construction machinery and compacted.
- At no time would heavy machinery come into direct contact with the native soil of the site and the site would remain intact at this location.

In addition, a Caltrans archaeologist and Native American monitor will be present during all ground disturbing activities throughout the entirety of the project.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted.

Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the District Environmental Branch so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

2.2 PHYSICAL ENVIRONMENT

2.2.1. Water Quality and Storm Water Runoff

Regulatory Setting

Section 401 of the Clean Water Act requires water quality certification from the State Water Resource Control Board (SWRCB) or a Regional Water Quality Control Board (RWQCB) when the project requires a Federal permit. Typically this means a Clean Water Act Section 404 permit to discharge dredge or fill into a water of the United States, or a permit from the Coast Guard to construct a bridge or causeway over a navigable water of the United States under the Rivers and Harbors Act.

Along with Clean Water Act Section 401, Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the NPDES program to the SWRCB and the nine RWQCBs. To ensure compliance with Section 402, the SWRCB has developed and issued the Department an NPDES Statewide Storm Water Permit to regulate storm water and non-storm water discharges from Department' right-of-way, properties and facilities. This same permit also allows storm water and non-storm water discharges into waters of the State pursuant to the Porter-Cologne Water Quality Act.

Storm water discharges from the Department's construction activities disturbing one acre or more of soil are permitted under the Department's Statewide Storm Water NPDES permit. These discharges must also comply with the substantive provisions of the SWRCB's Statewide General Construction Permit. Non-Departmental construction projects

(encroachments) are permitted and regulated by the SWRCB's Statewide General Construction Permit. All construction projects exceeding one acre or more of disturbed soil require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. The SWPPP, which identifies construction activities that may cause discharges of pollutants or waste into waters of the United States or waters of the State, as well as measures to control these pollutants, is prepared by the construction contractor and is subject to Department review and approval.

Finally, the SWRCB and the RWQCBs have jurisdiction to enforce the Porter-Cologne Act to protect groundwater quality. Groundwater is not regulated by Federal law, but is regulated under the State's Porter-Cologne Act. Some projects may involve placement or replacement of on-site wastewater treatment systems (OWTS) such as leach fields or septic systems or propose implementation of infiltration or detention treatment systems, which may pose a threat to groundwater quality. Currently, the OWTS program is without SWRCB regulation but site specific evaluation of threats to water quality should be addressed in the environmental document. Design standards for installation and operation of infiltration and detention treatment systems should protect groundwater quality and those protections should also be addressed in the environmental document.

Affected Environment

The North Coast Regional Water Quality Control Board (RWQCB) has adopted a Basin Plan for the North Coast Region. The Basin Plan defines beneficial uses of receiving waters, sets forth water quality objectives to protect and enhance these beneficial uses, and formulates water management programs to control discharges to these receiving water bodies.

RWQCB designated the following beneficial uses in the Basin Plan for the South Fork Eel River. Existing uses include: municipal and domestic supply; agricultural supply; industrial service supply; ground water recharge; freshwater replenishment; navigation; water contact recreation; non-contact recreation; commercial and sport fishing; warm and cold freshwater habitat; wildlife habitat; rare, threatened, and endangered species; migration of aquatic organisms; and spawning, reproduction, and/or early development. Potential uses identified in the Basin Plan include industrial process supply and hydropower generation.

The South Fork Eel River is noted as having impaired water quality for sediment and temperature and is listed on the U.S. Environmental Protection Agency's (EPA) Section 303(d) List of Water Quality Impaired Segments. Waters on the 303(d) list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology.

A technical Total Maximum Daily Load (TMDL) for temperature and sediment was promulgated by the EPA for the South Fork Eel River in December 1999. Upon completion of the technical TMDL, the State is charged with ensuring the TMDL and associated load allocations. There are several mechanisms available to implement the actions necessary to meet a TMDL. These mechanisms include:

- Regulatory action(s) of the Regional Water Board, such as a permit, waiver, or enforcement order.
- Regulatory action(s) of another state, federal, or local agency. A Memorandum of Understanding may be appropriate to describe the specific regulatory actions to be taken.
- Non-regulatory action(s) such as third party agreements and self-determined pollutant control.
- Amendments of the Water Quality Control Plan for the North Coast Region (the Basin Plan), in the form of an Action Plan, which describes the steps that are necessary to meet the TMDL.

Existing highway drainage patterns within the project limits may be categorized into two types. The first is sheet flow to the shoulder of the road and dispersal to the surrounding forest. The second is collection of the roadway drainage by roadside ditches which flows to either a culvert under the roadway or to a defined drainage course. Approximately 58% of the existing roadway drainage is sheet flow. Another approximately 38% is collected in roadside ditches and the remaining four percent is collected by an asphalt concrete dike on the roadside.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

The primary potential for water quality impacts would come from two sources: soil erosion and suspended solids being delivered to the South Fork Eel River. There would be a low potential for non-stormwater contaminants from construction activities to enter the River. Stormwater runoff from the proposed project would drain into the South Fork Eel River.

The areas temporarily disturbed during construction would be vulnerable to erosion until erosion control measures are in place or vegetation provides effective ground cover to stabilize soils from erosion processes. The proposed project design will maintain as much sheet flow of highway drainage as possible to utilize the exceptional filtering properties of the forest duff layer. The proposed project would not make substantial changes to existing drainage patterns but would make a small increase in impervious surface area with additional pavement (0.3 acres). Potential temporary impacts resulting from runoff from washing vehicles will be avoided by restricting vehicles being washed onsite.

Permanent storm water treatment facilities were considered as part of the project but a variety of factors make implementing any such facilities difficult, including the topography, lack of right of way, and environmental sensitivity of the project location. About 85 percent of the project length is within the State Park and State Park representatives indicated their desire to minimize ground disturbance and visual impacts, especially in the old growth redwood forest. Adding storm water treatment facilities, such as bioswales, would greatly increase the ground disturbance area in the park. Outside the park, the roadway is located on a steep hillside and there is not adequate room adjacent to the highway to install treatment facilities. The existing right of way within the project limits is primarily 60 to 66 feet in width, which leaves little room to find suitable sites for treatment facilities. Acquiring sufficient additional right of way from California Department of Parks and Recreation would be difficult.

Working with State park staff, one improvement project was identified that would reduce the amount of existing impervious surface area within Richardson Grove State Park. This improvement would include removal of a public restroom at the Visitor Center that is adjacent to a leaning redwood tree. This restroom is currently closed to the public due to the

threat of the tree falling onto the restroom. By removing the restroom and its foundation approximately 900 square feet of hardened surface would be removed. Removing the foundation will require use of heavy equipment to break up the concrete. Excavation would be approximately 12 inches in depth.

Fueling or maintenance of construction vehicles would occur in the project area during construction, and the risk of accidental spills or releases of fuels, oils, or other potentially toxic materials would exist. An accidental release of these materials could pose a threat to water quality if discharges were to enter culverts, the South Fork Eel River, its tributaries, or groundwater. The magnitude of the impact from an accidental release would depend on the volume and type of material spilled.

The existing perforated culvert at PM 1.35 and rusted culverts at PM 1.28 and PM 1.34 will be replaced. At the culvert at PM 1.18 the existing headwall will be replaced with a drainage inlet while maintaining the existing pipe. At PM 1.78, roadside water presently draining down an eroded steep slope to a drainage will be redirected into an overside 12 inch drain which will be connected to the 48 inch existing culvert. At PM 2.10, stormwater which presently flows over the side of a fill slope and is causing erosion will be collected into a new down drain.

With the No Build Alternative, the potential for erosion would not increase over existing. However, the beneficial impacts to water quality resulting from the drainage improvements would not occur.

Avoidance, Minimization, and/or Mitigation Measures

Minimization measures for construction impacts would focus on the control of sediment, suspended solids, and non-stormwater discharges. For stormwater quality protection, Caltrans has a Storm Water Management Plan (SWMP) which identifies Best Management Practices (BMPs) to reduce or eliminate pollutants in runoff discharging to drainage conveyances and waterways.

BMPs anticipated to be utilized during construction include, but are not limited to:

- Use of duff collected on site to cover disturbed areas
- Use of fiber rolls on slopes as interrupter devices for surface flows
- Use of check dams, gravel bag berms, earth dikes/swales or ditches to control runoff and concentrated flow in a non-erosive manner
- Use of drainage inlet protection where appropriate
- Use of sweeping and/or vacuuming to control tracking or other construction-related residue
- Use concrete washout facilities
- Staging area on the shoulder at the northerly project limits adjacent to the South Fork Eel River would be protected by gravel bag berm or other device so any drainage from the site is filtered
- No water drafting will occur in South Fork Eel River. Water needed for construction including for dust control will be obtained from a commercial source.

Prior to construction, Caltrans will prepare a spill contingency plan for the project that includes identification of procedures and response crews in the event of an accidental release of hazardous materials in the Stormwater Pollution Prevention Plan.

2.2.2. Geology/Soils/Seismic/Topography

Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features are also protected under the California Environmental Quality Act.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department’s Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE

is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

Affected Environment

The terrain in the project area is mountainous area of the northern California Coast Range consisting of mountains with rounded ridges, steep and moderately steep sides, and narrow canyons. Fluvial erosion and mass wasting are the primary geomorphic processes. The elevation of the project area is about 500 feet above sea level.

The soils have a high content of organic material in the upper layer with marine sediments below. The soils are leached free of carbonates, and some older soils are strongly acid. Soil moisture regimes in the project area are predominantly xeric (dry) or at least dry during the summer months. The surface deposits underlying the project site consist primarily of silty, sandy gravel with cobbles and boulders.

The existing cut slopes within the project limits are generally only a few feet high with slopes of approximately 55°. The existing fill slopes within the project limits are generally approximately 43°.

In support of the design for the proposed retaining wall structure, a subsurface geotechnical investigation was performed in December 2007 through February 2008. Results are summarized in the Foundation Report (Caltrans, 2008). Borings to a depth of 75 feet below ground surface and two seismic refraction lines were performed to identify any anticipated stability issues.

Based on geologic mapping and the geotechnical borings, the area at the northern end of the project is underlain by colluvium primarily composed of clayey sands and gravel. Rock, consisting of slightly too very intensely fractured sandstone was also encountered in some of the borings and is interpreted to represent boulders within the colluvium. Bedrock in the area is mapped as silty shale, siltstone, sandstone, and mudstone of the Tertiary-Cretaceous Yager Formation. Based on field mapping and aerial photo interpretation, numerous debris slides have occurred at the very northerly limits of the project area, but no evidence of landslide

activity was observed within the limits of the proposed wall. No other potential geologic hazards were identified.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

The proposed cut slopes would be designed at 1:1 slope ratio with the proposed cut slopes reaching a maximum height of approximately 25 feet. The proposed project would not result in increased susceptibility to erosion and geologic hazards such as earthquakes and liquefaction. The project would not impact any known natural landmark or sensitive landform.

The No Build Alternative would not impact the existing soils or geology of the area.

Avoidance, Minimization and/or Mitigation Measures

For a listing of the proposed Best Management Practices related to erosion control, see the Water Quality Section above.

2.2.3. Hazardous Waste/Materials

Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA provides for “cradle to grave” regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992

- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the Federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

The above regulatory criteria are based on chemical concentrations. For waste containing metals, like lead, the waste is classified as “California hazardous” when either the total metal content exceeds the respective Total Threshold Limit Concentration (TTLC) or the soluble metal content exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard Wasted Extraction Test (WET). A material is classified as RCRA hazardous, or “federal hazardous,” when the soluble metal content exceeds the federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP). The TTLC value for lead is 1,000 mg/kg. The STLC and TCLP values for lead are both 5.0 milligrams per liter (mg/l).

For the purposes of this project, toxicity (i.e., lead concentrations) was the primary factor considered for waste classification since waste generated during the construction activities

would not likely warrant testing for ignitability or corrosivity. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

The Department of Toxic Substances Control (DTSC) regulates and interprets hazardous waste laws in California. DTSC generally considers excavated or transported materials that exhibit “hazardous waste” characteristics to be a waste requiring proper management, treatment, and disposal. Soil that contains lead above hazardous waste thresholds and is left in-place would not be necessarily classified by DTSC as a “waste.” The DTSC has provided site-specific determinations that “movement of wastes within an area of contamination does not constitute “land disposal” and thus, does not trigger hazardous waste disposal requirements.”

Affected Environment

Aerially deposited lead (ADL) can be found in the surface and near surface soils alongside most major roadways resulting from motor vehicle exhaust deposits. Typically aerially deposited lead is found in shoulder areas and has a high solubility when subjected to the low PH conditions of waste characterization tests. Shoulder soils on urban and highly traveled rural highways are commonly above Soluble Threshold Limit Concentration criteria. An investigation for aerially deposited lead for the proposed project included collecting soil samples along the unpaved shoulder and cut slope areas adjacent to US Route 101 within the project limits and then analyzing the samples in a California State certified laboratory. Results are presented in the technical report, “Aerially Deposited Lead Site Investigation Report” (Geocon Consultants Inc., February 2008). Ninety-three soil samples were collected from thirty-three hand-auger borings on December 11, 2007. Nineteen borings were drilled from along the shoulder areas and the remainder were drilled from the proposed cut slope areas. Borings were excavated to a depth of 18 inches. Soil samples were collected at boring depths of 0 to 6 inches, 6 to 12 inches, and 12 to 18 inches. The ninety-three soil samples were analyzed for total lead following the U.S. Environmental Protection Agency (EPA) Test Method 6010B. Those samples with greater than 50 mg/kg total lead (15 soil samples) were analyzed for soluble (WET) lead following the EPA Test Method 7420.

No properties listed on the Hazardous Waste and Substances Site list (a.k.a., Cortese List) per Section 65962.5 of the Government Code are present within the project limits.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

The Geocon investigation found that aerially deposited lead is present at the project site at levels that require bolstered dust control specifications, preparation of a health and safety plan for worker safety, and material disposal considerations. The total amount of lead found in the material was low; however, the lead that is present has a high soluble fraction typical of aerially deposited lead found along California highways.

Total lead was detected in 81 of the 93 soil samples analyzed at concentrations ranging from 5.0 to 350 mg/kg, well below the hazardous waste threshold of 1,000 mg/kg. Fifteen of the 93 soil samples had reported total lead concentrations greater than 50 mg/kg, thus requiring further testing. WET soluble lead was reported for each of the fifteen soil samples analyzed at concentrations ranging from 2.3 to 28 mg/l. Twelve of the fifteen soil samples had soluble (WET) lead concentrations greater than the STLC value for lead of 5.0 mg/l.

The results from the analysis show, that as expected, the soils in the shoulder areas adjacent to the highway have a higher concentration of lead than in the cut slope areas. The analysis also showed that the underlying soil has higher levels of total lead and soluble lead than surface soils. Excavation to a depth of 24 inches in the project area is expected with the exception of the wall location which would require excavation up to 20 feet. While the levels in the shoulder areas in some of the subsurface samples do exceed the threshold defined as hazardous waste (5.0 mg/l predicted WET lead), when the subsurface soils are mixed in with the top six inches the overall totals do not exceed the threshold, though they approach this threshold. Table 3 summarizes the predicted soluble lead concentrations (WET) and the waste classification for excavated soil within roadway shoulders in the project area based on the calculated total lead upper confidence limits and the relationship between total and soluble (WET) lead.

Waste classifications as to being hazardous or non-hazardous are made based on the 90% upper confidence limits (UCL) of the lead content. This is considered to be sufficient to satisfy a good faith effort by the EPA for levels that do not meet the criteria for hazardous waste but will be disposed of outside of the state right of way. A risk assessment characterization based on the 95% upper confidence limits of the lead content is used for waste. Based on the 90 percent upper confidence limits results of less than 5.0 mg/l, soil waste generated from the Richardson Grove project site would not be classified as hazardous waste and would not require disposal as a RCRA hazardous waste.

However, it is Caltrans policy to use the more conservative definition of 95% upper confidence limits for defining waste if the material is to be disposed off site as opposed to being reused onsite or disposed of within the Caltrans right of way. Thus, if the excess material generated by the project would be given to the Contractor for disposal, Caltrans would consider the material hazardous waste and mandate that it be taken to a Class I landfill. If the material is used or disposed of onsite, it would not be considered hazardous waste.

Table 3 Lead Detection Results

Sample Population A- Shoulder Area

Sample Excavation Depth	90% UCL* Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	95% UCL Predicted WET Lead (mg/l)	Waste Classification
0 to 6 inches	35.2	2.5	37.4	2.7	Non-hazardous
Underlying soil (6 to 18 inches)	81.1	5.8	88.1	6.3	Hazardous
0 to 12 inches	63.5	4.6	68.8	4.9	Non-hazardous
Underlying soil (12 to 18 inches)	70.4	5.1	75.9	5.5	Hazardous
0 to 18 inches	65.8	4.7	71.2	5.1	Non-hazardous

* Note: UCL is upper confidence limits

The largest volume of excess material generated by the project is the cut slopes at the northerly portion of the project and the soils at these locations have low levels of both total and soluble lead. This material can be made property of the contractor for disposal and would not be classified as hazardous waste by internal Caltrans policy.

Fueling or maintenance of construction vehicles would occur in the project area during construction, and the risk of accidental spills or releases of fuels, oils, or other potentially toxic materials would exist. An accidental release of these materials could pose a threat to water quality if discharges were to enter culverts, the South Fork Eel River, its tributaries, or groundwater. The magnitude of the impact from an accidental release would depend on the volume and type of material spilled.

In addition, disturbing pavement delineation such as the yellow or white striping material by grinding or sandblasting can expose workers to lead. The repaving work that is part of the proposed project would include removal of striping and reapplying new striping.

Any soil with aerielly deposited lead below hazardous waste thresholds would be disposed within the State right of way. The designated disposal site is located just south of the proposed project at PM 106.50 in Mendocino County.

The No Build Alternative would not remove any contaminated soil from the project site.

Avoidance, Minimization, and/or Mitigation Measures

The Contractor will be required to prepare a Lead Compliance Plan for worker safety due to aerielly deposited lead issues as well as issues related to removing the pavement striping. This plan would include dust control specifications, health and safety plans for worker safety and material disposal considerations.

Caltrans, as part of its stormwater management plan has prepared a spill contingency plan that includes identification of procedures and response crews in the event of an accidental release of hazardous materials.

2.2.4. Air Quality

Regulatory Setting

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), lead (Pb), and sulfur dioxide (SO₂).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTP) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as Humboldt County Association of Governments for Humboldt County and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP,

then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA and CEQA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in “nonattainment” areas the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Affected Environment

The climate in the area is affected by a combination of the cool coastal zone and the warm Mediterranean climate common throughout most of inland California. Winters are often cool and rainy and the summers are warm and dry. The area receives an average of nearly 70 inches of rainfall annually. Mean annual temperature is about 40° to 53° F.

The project is located in an attainment/unclassified area for all current federal air quality standards. Therefore, conformity requirements do not apply. The potential for encountering naturally occurring asbestos is low.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and various other activities. Emissions from construction equipment also are anticipated and would include carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs),

directly-emitted particulate matter (PM₁₀ and PM_{2.5}), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from Nox and VOCs in the presence of sunlight and heat.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces.

Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM¹⁰, PM^{2.5}, and small amounts of CO, SO₂, Nox, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soil. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM¹⁰ emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM¹⁰ emissions would depend on soil moisture, silt content of the soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Construction activities for large development projects are estimated by the EPA to add 1.09 tonne (1.2 tons) of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50 percent. Caltrans' Standard Specifications (Section 10) pertaining to dust minimization requirements requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM¹⁰ emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO₂, Nox, VOCs, and some soot particulate (PM¹⁰ and PM^{2.5}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO₂ is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Off-road diesel fuel meeting Federal standards can contain up to 5,000 parts per million (ppm) of sulfur, whereas on-road diesel is restricted to less than 15 ppm of sulfur. However, under California law and Air Resources Board regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel, so SO₂-related issues due to diesel exhaust will be minimal. Some phases of construction particularly asphalt paving, would result in short term odors in the immediate area of the paving sites. Such odors would be quickly dispersed below detectable thresholds as distance from the site increases.

Mobile Source Air Toxics (MSAT)

This project has been determined to meet the criteria for Exempt Projects or Projects with No Meaningful Potential MSAT Effects. The types of projects included in this category are:

- Projects qualifying as a categorical exclusion under 23 CFR 771.117(c);
- Projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126; or
- Other projects with no meaningful impacts on traffic volumes or vehicle mix

The purpose of this project is to remove the STAA restriction by constructing minor realignments and shoulder widening of the existing roadway. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. Even after accounting for a 64 percent increase in VMT, FHWA predicts MSATs will decline in the range of 57 percent to 87 percent, from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in VMT. This will both reduce the background level of MSATs as well as the possibility of even minor MSAT emissions from this project.

The No Build Alternative would not result in any changes over the existing condition.

Avoidance, Minimization, and/or Mitigation Measures

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in adverse or long-term conditions. Implementation of the following measures will reduce any air quality impacts resulting from construction activities:

- The construction contractor shall comply with Caltrans' Standard Specifications Section 7-1.01F and Section 10 of Caltrans' Standard Specifications (1999).
- Section 7, "Legal Relations and Responsibility," addresses the contractor's responsibility on many items of concern, such as: air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; and convenience of the public; and damage or injury to any person or property as a result of any construction operation. Section 7-1.01F specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.
- Section 10 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 18.
- Water will be applied to the site and equipment as frequently as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas.
- Construction equipment and vehicles shall be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.
- Contractor will develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing environment.
- Equipment and material storage sites will be located as far as away from residential and park use areas as practical. Construction areas will be kept clean and orderly.

- To the extent feasible, Environmental Sensitive Areas will be established for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited. Sensitive receptors would include the highway areas in proximity to the campgrounds, residences located at the northern portion of the project and the Singing Trees Center.
- All transported loads of soils and wet materials will be covered prior to transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to reduce PM₁₀ and deposition of particulate during transportation.
- Dust and mud that are deposited on paved, public roads will be removed, or other measures employed to ensure roadways remain clear of debris such as mechanical brooms being equipped with vacuum instead of using kick brooms and pickup brooms.
- To the extent feasible, route and schedule construction traffic to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Mulch will be placed and revegetation will occur as soon as practical after grading to reduce windblown particulate in the area.

Climate Change

Climate change is analyzed in Chapter 3. Neither the US Environmental Protection Agency or the Federal Highway Administration (FHWA) has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on FHWA's climate change website (<http://www.fhwa.dot.gov/hep/climate/index.htm>), climate change considerations should be integrated throughout the transportation decision-making process--from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of the project level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

Because there have been more requirements set forth in California legislation and executive orders regarding climate change, the issue is addressed in the CEQA chapter of this environmental document and may be used to inform the NEPA decision. The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

2.2.5. Noise

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the NEPA-23 CFR 772 noise analysis *National Environmental Policy Act and 23 CFR 772*.

National Environmental Policy Act

For highway transportation projects with FHWA (and the Department, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for

residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). Table 4 lists the noise abatement criteria for use in the NEPA-23 CFR 772 analysis.

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (db) with 0 db corresponding roughly to the threshold of hearing. Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the mid-range frequencies. This is called, “A-weighting,” and the decibel level so measured is called the “A-weighted sound level” (dBA). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighted curve. Table 5 shows typical A-weighted levels for different types of noise from common activities.

Table 4 Noise Abatement Criteria (NAC) For Various Land Use Categories

Activity Category	NAC, Hourly A-Weighted Noise Level, dBA $L_{eq}(h)$	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	--	Undeveloped lands.
E	52 Interior	Residence, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Table 5 Noise Levels of Common Activities

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
Quiet Rural Nighttime	30	Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

In accordance with the Department’s *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, August 2006*, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final project design are incorporated into the project plans and construction contract specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

The Department's *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum five dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978 and the cost per benefited residence.

Affected Environment

A Noise Report (Caltrans, 2007) was prepared for this project. Within the project limits, existing noise sources are predominantly highway traffic noise with some intermittent contribution from sources within Richardson Grove State Park. A sound meter was set up within the campground at Madrone Loop Site # 70. Existing typical daytime traffic noise levels, approximately 100 feet from the roadway centerline, are 64 dBA Leq while typical evening levels are 54 dBA Leq.

Land use within the project limits is primarily open space in Richardson Grove State Park. There is a park campground and portions of hiking trails located adjacent to the roadway and some housing units for park staff are located at the northerly portion of the park near US Route 101. At the northernmost portion of the project limits the land use is residential with private residences located on the top of the cut west of the highway and the Singing Trees Recovery Center, a residential facility for alcohol and drug treatment abuts the highway to the east. These residences, campground, and recovery center would be sensitive receptors, and as such, would fall under Category B of the Noise Abatement Criteria listed in Table 4 above.

The project does not meet the definition of a Type 1 project as defined in 23 CFR 772. A Type 1 project is defined by Caltrans Traffic Noise Protocol as follows: "A proposed federal or federal-aid highway project for the construction of highway on a new location, or the

physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or increases the number of through-traffic lanes.” As a result, no noise analysis or consideration of abatement for long-term operations is required under FHWA or Caltrans criteria.

Proposed noise level standards outlined in the Humboldt County Noise Ordinance Standards as contained in the current draft of the County General Plan Update are shown in Table 6.

Table 6 Humboldt County Proposed Noise Ordinance Standards

Proposed Policy:			
No Use Shall Create Ambient Noise Levels Exceeding Standards			
Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
Residential	7am-10 pm	60	70
	10pm-7 am	55	75
Commercial and Office	7am-10 pm	65	75
	10 pm-7 am	60	70
Industrial	7am- 10 pm	70	80
	10pm – 7am	65	75

Environmental Consequences

Impacts from the preferred alternative are discussed below.

Long-Term: Traffic noise levels are not expected to increase appreciably due to the project as the travel lanes are not moving substantially closer to any sensitive receptors.

Short-term: Construction of the project is anticipated for day as well as evening hours and would temporarily impact noise levels in the vicinity of the construction activities.

Construction-related noise levels are normally highest during the demolition and earthwork phases of construction because of the heavy equipment and impact tools required to complete the work. Construction noise impacts primarily result when construction activities occur

during noise-sensitive times of the day (early morning or evening hours), construction occurs in areas immediately adjoining noise sensitive land uses, or when construction durations last over extended periods of time.

The FHWA Roadway Construction Noise Model has been utilized to estimate noise levels for construction. Typical hourly average noise levels resulting from the construction of roadways are about 73 dBA to 82 dBA Leq measured at a distance of 100 feet. There would be variations in construction noise levels on a day-to-day basis depending upon the actual activities occurring at the site. Table 7 summarizes the maximum noise levels of various pieces of heavy equipment and construction activities that could be expected during construction of the proposed project. Maximum noise levels resulting from individual pieces of equipment range from approximately 70 dBA to 84 dBA measured at a distance of 100 feet from the highway centerline. Receptors located further away from the construction would not be affected as greatly as those closer as noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor. Shielding by buildings or terrain can substantially reduce construction noise levels at distant receptors.

Table 7 Maximum Noise Levels from Construction Activities at 100 Feet

Equipment	Average/Max Noise Levels at 100 ft (dBA)
Front End Loader	69Leq/73Lmax
Excavator	70Leq/74Lmax
Backhoe	67Leq/71Lmax
Grader	75Leq/79Lmax
Compressor	67Leq/71Lmax
Jackhammer	75Leq/82Lmax
Concrete Saw	76Leq/84Lmax
Paver	68Leq/71Lmax
Dump Truck	66Leq/70Lmax
Ground Clearing	78Leq/78Lmax

Maximum and average noise levels generated by construction activities could temporarily exceed the noise level standards established by Humboldt County, especially in the case of construction activities occurring at night. Some campsites and trails, as well as the Singing Trees facility just outside the park would be affected the most. Only repaving and restriping work is proposed in those areas of US Route 101 closest to the park campsites. In addition, some noise impacts within the park would be offset by the handwork that would be

conducted around the redwood trees in the park (no heavy equipment with the exception of the paving and striping activities within the structural root zone¹² of redwood trees).

Under the No Build Alternative, no impacts from construction noise would occur.

Avoidance, Minimization, and/or Mitigation Measures

Noise generated during construction would be minimized by adhering to the provisions of Caltrans Standard Specifications, Section 7-1.01 I, “Sound Control Requirements.” This section requires the contractor to comply with all local sound control and noise level rules, regulations, and ordinances, which apply to any work performed pursuant to the contract including requiring each internal combustion engine used for any purpose on the job or related to the job to be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler.

The following additional noise control measures may be considered for implementation, if feasible, to reduce the effects of construction noise on sensitive noise receptors.

- Limit more severe (saw cutting, jack hammering) noise-generating activities to the hours of 7 am to 10 pm
- Require that contractors equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for equipment.
- Require contractors to limit or prohibit idling of internal combustion engines on equipment or vehicles that are not actively involved in construction activities.
- Avoid staging of construction equipment within 200 feet of sensitive areas and locate all stationary noise-generating construction equipment such as air compressors and portable power generators as far as practical from existing noise sensitive receptors.
- Initiate use of “noise curtains,” “noise tents,” or temporary barriers to screen stationary noise generating equipment and/or activities when located immediately adjacent to noise sensitive receptors.
- Encourage the contractor to utilize “quiet” air compressors and other stationary noise sources where technology exists.

¹² The structural root zone is defined as a circular area with the tree trunk at the center and a radius equal to three times the diameter of the tree trunk measured at breast height (4.5 feet above ground level). Most of a tree’s structural roots would be located in this area. (Department of Parks and Recreation, 2005)

Implementation of these additional noise control measures may minimize noise impacts and lower noise levels up to 8 dBA.

2.2.6. Energy

Regulatory Setting

The CEQA Guidelines, Appendix F, Energy Conservation, state that EIRs are required to include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

An Energy Analysis (Caltrans, 2008) was performed for this report. Removing the STAA restriction would allow for new combinations of tractor trailer rigs that are not currently allowed—one being the ability for trucking companies to use longer sleeper tractor cabs (not currently allowed) with existing trailer lengths that are currently used through the park and another being the ability to use shorter non-sleeper cabs (that are currently allowed) with longer trailers that are not currently allowed. While it is not known how many such combinations would replace the non-STAA combinations that pass through the project limits, it is not anticipated to result in a substantial change to the energy usage. In theory, the total number of truck trips could actually decrease after the project due to longer trailers having more capacity. Some diversion of truck traffic from other routes to US Route 101 might occur if using US Route 101 is deemed to be more economically feasible (less travel time, less distance) but the actual number unknown.

It is not anticipated that opening US Route 101 at Richardson Grove to STAA trucks, by itself, will necessarily induce new business growth in the North Coast. Because of this, it is not likely that there would be substantial increase in truck trips resulting from industrial or

commercial growth in the near term caused solely by the route becoming accessible to STAA vehicles. Any new growth in industrial or commercial business would likely be primarily dependent upon the overall economy of the North Coast in general.

It is anticipated that the number of trips that would decrease due to increased capacity of STAA vehicles would off-set any potential increases due to diversions of trucks to US Route 101 and increased industrial or commercial growth. Thus, the net gain or loss in truck trips would be insignificant as a result of the proposed project.

Existing tractor rigs have a fuel economy of approximately 5-6 miles per gallon of diesel fuel. Even the latest high-end tractor sleeper cabs speculate being able to have only a modest (10-15%) improvement to fuel economy. It is unknown how many such modern high-end rigs would be used, but it is anticipated that average fuel economy for tractor trailer rigs would not change substantially. The proposed improvements to the roadway are not expected to result in increased or decreased prevailing speeds or travel times through the project limits. Nor would the project result in increased highway capacity as no new lanes are being constructed.

The proposed project is not anticipated to result in substantial changes to number of truck trips, the percentage of trucks on the highway, prevailing speeds, travel times, roadway capacity, fuel economy of trucks or non-truck vehicles. Thus, it is anticipated that there would be no significant change in energy conservation as a result of the project.

2.3 BIOLOGICAL ENVIRONMENT

2.3.1. Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species section.

Wetlands and other waters are discussed in the next section.

Affected Environment

As stated in the Natural Environment Study (see Appendix I), (Caltrans, November 2008), the predominant natural plant communities in the project area are the Redwood series and the tan oak series (Sawyer and Keeler-Wolf, 1995) vegetation communities. The vegetation community within Richardson Grove State Park is predominately Redwood series, dominated by an overstory of large redwood trees. Douglas fir (*Pseudotsuga menziesii* spp. *menziesii*), big leaf maple (*Acer macrophyllum*), alder (*Alnus rubra*), and tan oak (*Lithocarpus densiflorus*) are also present. The brush/shrub understory community includes California hazelnut (*Corylus cornuta*), evergreen huckleberry (*Vaccinium ovatum*), and bush monkeyflower (*Mimulus aurantiacus*). Ground vegetation consists of plants such as sword fern (*Polystichum minitum*), gold-black fern (*Pentagramma triangularis*), and redwood sorrel (*Oxalis oregana*).

The area found at the northerly portion of the park and extending north outside of the park is the tan oak series with a mixture of tan oak, Douglas fir, and madrone (*Arbutus menziesii*). Brush/sapling understory community includes poison oak (*Toxicodendron diversilobum*), live oak (*Quercus chrysolepis*), and coyote brush (*Baccharis pilularis*). Ground vegetation consists of plants such as evergreen huckleberry, sword fern, and Himalayan blackberry (*Rubus discolor*).

Many of the larger redwood trees in the park are more than 1,000 years old and several of the trees are more than 300 feet tall. Although the California Native Plant Society Inventory does not include redwoods, it is a species that commands respect in and of themselves, in addition to providing habitat for listed species. The Biogeographic Data Branch of the California Department of Fish and Game has designated Redwood Forest as a Special Community Type (CDFG 2003).

Wildlife common in the vicinity include black-tailed deer, black bears, raccoons, gray foxes, Douglas squirrels, various bat species, osprey, California quail, dark-eyed juncos, various woodpecker species, and common crows.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

Most of the ground disturbance results from the excavation and fill to support the proposed realignments and occur at the following locations:

- PM 1.35 to PM 1.36- Approximately 300 cubic yards cut on western shoulder
- PM 1.37 to PM 1.39- Approximately 200 cubic yards of fill on eastern shoulder
- PM 1.56 to PM 1.61- Approximately 200 cubic yards of fill on western shoulder
- PM 1.65 to PM 1.75- Approximately 30 cubic yards cut and 40 cubic yards of fill on the eastern shoulder
- PM 2.05 to PM 2.10- Approximately 2200 cubic yards of cut on the western shoulder
- PM 2.10 to PM 2.15- Approximately 600 cubic yards fill on the eastern shoulder

Of the 54 trees proposed for removal with the preferred alternative, a little over half occurs inside of the park (55%). Nearly half of the trees to be removed (44%) are tan oaks with the majority ranging from four to twelve inches in diameter (see Table 8). Another 37 percent of the trees to be removed consist of Douglas fir trees ranging from 4 inches to 23 inches in diameter. Six redwood trees would be removed ranging from four inches to nineteen inches in diameter. The two redwood trees to be removed from the park are six inches and seven inches in diameter. Understory vegetation including smaller “seedlings” would also be removed. Subsequent to the draft environmental document, modifications were made to the retaining wall to reduce impacts. The wall was modified from an above the road retaining wall on the west side of the highway to a below the road retaining wall to the east of the highway. This resulted in a reduction in the number of tree removals necessary from approximately 87 trees to 54 trees.

Approximately ¼ acre of tan oak-dominated woodlands would be removed for the cuts and fills. The majority of tree removal occurs at two areas: the proposed cut in the park at PM 1.36 (13 trees) and the proposed cut that begins in the park at PM 2.04 and extends north of the park to PM 2.10 (10 trees within the park and 18 trees outside the park; see Appendix L.)

In addition to the tree removal itself, construction activities could result in other impacts to trees, both long term and short term. Long term impacts to the trees resulting from this project include placement of impervious material, placement of fill over the roots, changing drainage patterns, and compaction. The alteration to the drainage patterns results where uncontrolled drainage will be directed to a culvert, lessening erosion that is currently occurring. Short term impacts from construction can affect tree roots from such activities as soil disturbance; excavation; compaction; cutting roots; and exposure to fuel and oils from leaky equipment. It is estimated that the project would result in a total amount of disturbed area, that area between the cut/fill areas and the edge of the existing pavement, of approximately 0.73 acres within the project limits.

Table 8 Trees Proposed To Be Removed Within the Project Area

Species	Size*	DEIR Total Quantity**	Preferred Alternative Total Quantity	Number in the Park
Redwood	4 – 8	5	4	2
Redwood	8 – 12	1		
Redwood	12 – 18	1	1	
Redwood	18 – 24		1	
Douglas Fir	4 – 8	6	3	
Douglas Fir	8 – 12	9	6	5
Douglas Fir	12 – 18	9	9	4
Douglas Fir	18 – 24	3	2	1
Big Leaf Maple	4 – 8			
Big Leaf Maple	8 – 12			
Big Leaf Maple	12 – 18	1	1	1
Big Leaf Maple	18 – 24	1	1	1
Tan Oak	4 – 8	22	11	7
Tan Oak	8 – 12	21	11	5
Tan Oak	12 – 18	3	1	1
Tan Oak	18 – 24	3	1	1
Other	4 – 8	1	1	1
Other	8 – 12			
Other	12 – 18	1	1	1
Other	18 – 24			
Total		87	54	30

*Size, in inches at diameter breast height (the diameter of the tree trunk measured at 4.5 feet above ground level)

** The estimate of tree removal at the previous retaining wall location as discussed in the draft environmental document represents the maximum potential tree removal; actual number is expected to be somewhat less. The difference in the quantity of tree removal in the preferred alternative is due to the reduced amount of tree removal at the retaining wall location.

Of most concern is construction activity that occurs within the structural root zone of the old growth trees for both long term and short term impacts. The structural root zone is a circular area with the tree trunk at the center with a radius equal to three times the diameter of the tree trunk measured at 4.5 feet above the ground level (Department of Parks and Recreation, 2005). Within the project limits, there would be construction activities that occur within the structural root zone of approximately 74 redwood trees ranging in diameter from 18 inches to 15 feet (See Table 9). This zone is where most of the nutrient and water absorption occurs. The possibility of injury to a tree resulting from construction activities generally increases as the distance to the trunk decreases. In addition, construction activities occurring from the surface to three feet below ground level have the most potential to result in impacts to trees (Department of Parks and Recreation, 2005).

The proposed realignments would require locating the roadbed nearer to some trees and locating it further from other trees and removing the existing pavement. An additional 0.30 acres of impervious surface would be placed overall within the project limits. Of this, 0.14 acre of roadbed material would be placed within the structural root zone area of trees. This represents a nearly five percent increase in the total amount of hardened surface (roadbed) within the structural root zone area of trees within the project limits including both within the boundaries of the park and outside the park.

Some trees would not have roadbed material placed within the structural root zone area, but would be located within a fill slope and have fill placed over the roots. The biggest concern is fill on the root flare of the trunk. Within the project limits, fill depths within the structural root zone range from a few inches to three and a half feet. In locations where fill four inches in depth or greater would be placed up to the trunk of a tree eighteen inches in diameter or larger, it is proposed to place a brow log against the trunk. A brow log is a log that is placed parallel to the road against the trunk of the tree to be protected. Fill is placed up against the brow log not the trunk of the tree. Placing the brow log prevents fill material being placed against the trunk which helps maintain air circulation. Trees where brow logs are being proposed are shown in Table 9.

About 41 redwood trees thirty inches or greater in diameter within the park would have fill placed within the structural root zone. The maximum depth of fill on these redwoods would be three and a half feet. Of those redwood trees affected by fill, about 50 percent would have fill of six inches or less and over 70 percent would have fill of 12 inches or less (see Table 10).

It is estimated that construction excavation would occur within the structural root zone of 58 redwood trees thirty inches in diameter or greater within the park. The maximum depth of the excavation within the structural root zone of redwoods thirty inches in diameter or greater within the park is two feet. Nearly thirty percent of these redwood trees affected would experience excavation of six inches or less. Table 10 provides information on trees that would have construction in the structural root zone and Appendix L includes plans showing where construction occurs within the structural root zone of trees. The number of trees to be

affected by construction impacts in the structural root zone increased from the number reported in the draft environmental document as a result of more refined design information.

Table 9 Potential Tree Root Effects For Entire Project Limits

	PM	R/L*	Species	Size**		PM	R/L*	Species	Size**
1	1.18	R	redwood	72	44	1.45	L	redwood***	78
2	1.18	R	redwood	90	45	1.45	R	redwood	156
3	1.18	L	Douglas fir	17	46	1.45	L	redwood	82
4	1.18	L	other	12	47	1.50	R	redwood	102
5	1.28	L	redwood	96	48	1.50	L	redwood	144
6	1.28	L	redwood	18	49	1.50	L	redwood	144
7	1.28	L	redwood	48	50	1.50	R	redwood	132
8	1.28	L	redwood	84	51	1.50	L	redwood	84
9	1.28	R	redwood	48	52	1.50	R	redwood	84
10	1.28	R	redwood	48	53	1.50	R	redwood	96
11	1.28	R	Douglas fir	12	54	1.50	L	redwood	36
12	1.28	R	Douglas fir	16	55	1.50	L	redwood	72
13	1.28	L	redwood	180	56	1.50	L	redwood	96
14	1.28	L	redwood	96	57	1.55	R	redwood	96
15	1.34	R	Douglas fir ***	24	58	1.55	L	redwood	78
16	1.34	R	oak	6	59	1.55	R	redwood	96
17	1.34	L	redwood	78	60	1.55	R	redwood	48
18	1.34	R	Douglas fir***	24	61	1.55	L	redwood	90
19	1.34	R	Douglas fir	16	62	1.55	L	redwood	30
20	1.34	R	redwood	115	63	1.55	R	redwood	36
21	1.35	L	alder	13	64	1.55	L	redwood	96
22	1.35	R	redwood	86	65	1.55	L	redwood	60
23	1.35	R	redwood	90	66	1.55	R	redwood	120
24	1.35	R	alder***	19	67	1.55	L	other	36
25	1.35	L	redwood	42	68	1.55	L	redwood	84
26	1.35	L	redwood	132	69	1.60	L	redwood	120
27	1.40	L	redwood	54	70	1.60	L	redwood***	60
28	1.40	R	redwood	120	71	1.60	L	redwood	156
29	1.40	R	redwood***	19	72	1.65	R	redwood	182
30	1.40	R	redwood***	18	73	1.65	R	redwood	216
31	1.40	R	redwood	108	74	1.65	L	redwood	120
32	1.40	R	redwood	48	75	1.65	L	redwood	108
33	1.41	L	redwood	72	76	1.65	L	redwood	48
34	1.41	L	redwood	96	77	1.65	L	redwood	66
35	1.41	R	redwood	94	78	1.65	R	redwood	90

	PM	R/L*	Species	Size**		PM	R/L*	Species	Size**
36	1.41	R	redwood	43	79	1.68	R	redwood	48
37	1.45	R	redwood	96	80	2.05	R	redwood	30
38	1.45	L	redwood	54	81	2.05	R	redwood	34
39	1.45	R	redwood	108	82	2.05	R	redwood	46
40	1.45	R	redwood	132	83	2.15	R	Douglas fir	36
41	1.45	L	redwood***	84	84	2.15	R	redwood	48
42	1.45	L	redwood	84	85	2.15	L	redwood	36
43	1.45	L	redwood	74	86	2.15	R	redwood	60

* L/R refers to location of the tree in regards to the roadway: left or right of the highway as facing north.

** Size, in inches at diameter breast height (diameter of tree as measured 4.5 feet above ground level)

*** Trees to be affected by placement of fill protected with brow log

Both the Caltrans certified arborist, Darin Sullivan, and an independent arborist contracted by Save The Redwoods League, Dennis Yniguez, reviewed the project plans and conducted on-site reviews and determined with the design as proposed with the minimization measures in place, the old growth trees would not be substantially adversely affected. Mr. Yniguez notes, “Proposed grade changes will be minimized, and will favor moderately increasing road height rather than severing roots beneath existing grades. Material have been selected to combine strength and permeability with minimal disruption. ‘Brow log’ sections of cut trees will be used at several locations as an interface between moderate fill soil and established redwoods. Excavation near old-growth trees will be done by hand or with an ‘air spade,’ an arboricultural instrument that uses compressed air to remove soil from roots without damaging them. The existing root systems of old-growth trees will be almost entirely undisturbed by strategic additions to shoulder width and by minimal changes to road height.”

Construction activities would likely result in additional compaction of the soils within the structural root zone of some redwoods, while realignment could result in a decrease in compaction in other areas within the project by moving the roadway further from the trees and removing the existing roadbed. Compaction typically alters soil structure and hydrology by increasing soil bulk density; breaking down soil aggregates; decreasing soil porosity, aeration and infiltration capacity; and by increasing soil strength, water runoff, and soil erosion. Absorption of the major mineral nutrients is reduced by compaction of both surface soils and subsoils. Severe compaction of the soil also affects seed germination and growth of

seedlings. Many of the large redwoods within and adjacent to the project area are likely affected by compaction resulting from the existing US Route 101 roadway and park facilities (campsites, trails, roads, park structures). The proposed project is not anticipated to substantially increase the magnitude of compaction on old growth redwoods that presently exists as the edge of pavement in many instances is less than a foot away from the trunks.

The proposed project design will maintain as much sheet flow of highway drainage as possible to utilize the exceptional filtering properties of the forest duff layer. The proposed project would not make substantial changes to existing drainage patterns but would make a small increase in total amount of impervious surface area (0.3 acres) within the project limits. This increase in impervious surface occurs as a result of the wider shoulders in and outside the park as well as some additional increase in roadbed surface with the realignments. Both the Caltrans arborist and the Save The Redwoods League arborist determined that the project would not have a substantial impact on availability of water to the old growth redwoods adjacent to the roadway in the construction areas.

Table 10 Cut and Fill Depths at Redwood Trees 30” and Larger Within Richardson Grove State Park

AREAS OF CUT AND FILL AROUND REDWOOD TREES IN STRUCTURAL ROOT ZONE*										
Cut and fill depth by redwood trees 30” or greater within structural root zone										
Tree	STA	Location (side of road)	Cut (in inches)	Fill (in inches)		Tree	STA	Location (side of road)	Cut (in inches)	Fill (in inches)
1	64+70	Right	2			35	78+30	Left	14	10
2	65+30	Right	19	1		36	78+70	Left	19	1
3	66+60	Left	19	10		37	79+30	Left	20	
4	66+80	Left	20	7		38	79+20	Right		8
5	67+60	Left	20	1		39	80+00	Right	12	16
6	67+50	Right	19	4		40	80+30	Right	19	2
7	67+60	Right	17	4		41	80+80	Right	22	1
8	68+30	Left	5	11		42	81+10	Right	24	
9	69+00	Left	20	1		43	81+40	Right	2	
10	69+50	Left	23			44	80+30	Left	20	2
11	69+80	Right	7	14		45	80+50	Left	22	
12	70+90	Right	1			46	80+50	Left	1.8	
13	71+10	Right	2			47	81+00	Left	2	

*Chapter 2 – Affected Environment, Environmental Consequences,
and Avoidance, Minimization and/or Mitigation Measures*

AREAS OF CUT AND FILL AROUND REDWOOD TREES IN STRUCTURAL ROOT ZONE*										
Cut and fill depth by redwood trees 30” or greater within structural root zone										
Tree	STA	Location (side of road)	Cut (in inches)	Fill (in inches)		Tree	STA	Location (side of road)	Cut (in inches)	Fill (in inches)
14	71+90	Left	14	4		48	81+40	Left	2	
15	71+80	Left	13	7		49	81+70	Left	24	
16	72+10	Left		2		50	82+00	Left	23	
17	72+10	Right	20	41		51	82+20	Left	1	
18	73+50	Right	12	41		52	81+60	Right	23	
19	74+70	Right	2			53	82+30	Right	20	5
20	75+00	Left		2		54	82+80	Left		28
21	75+00	Left	14	5		55	83+70	Left	20	12
22	75+30	Right	5			56	84+20	Left	20	19
23	75+40	Right	5			57	84+60	Left		4
24	76+00	Right	20	24		58	87+60	Right	4	4
25	76+20	Right	18	37		59	87+60	Right	20	5
26	76+50	Right	18	29		60	87+60	Left	7	
27	76+30	Left	18	2		61	87+80	Left	7	
28	76+70	Left	16	6		62	87+80	Left	7	
29	76+80	Left	14	6		63	88+50	Left		8
30	76+90	Left	14	10		64	89+10	Right	20	
31	77+50	Left	8	22		65	89+70	Right	19	
32	77+50	Right	1			66	107+30	Right		4
33	78+30	Right		1		67	107+60	Right		4
34	77+90	Left	6	30		68	107+60	Right		4

* Structural root zone is a circular area with the tree trunk at the center and a radius equal to three times the diameter of the tree trunk measured at breast height (4.5 feet above ground level).

Short-term construction impacts can occur during the construction itself and immediately after. Trees could be subject to stress during ground disturbing activities. To help minimize potential stress on the redwood trees, watering will be provided in those areas where excavation would take place within the structural root zone. The disturbed areas would be vulnerable to erosion until erosion control measures are in place or vegetation provides effective ground cover to stabilize soils from erosion processes.

There are no known wildlife migration corridors within the project limits, although it is likely that wildlife cross the highway to access the South Fork Eel River. The existing roadway bisects Richardson Grove State Park, beyond which is open ranch land. The park itself fragments habitat, at least in those areas that provide visitor-serving uses such as the campground, roads, Visitor Center, and other ancillary structures that service the campground and park visitors as well as the residential units for park staff.

Under the No Build Alternative, there would be no additional long term impacts to the trees abutting the highway and no impacts resulting from construction.

Avoidance, Minimization and/or Mitigation Measures

Numerous measures have been incorporated into the project to avoid and minimize impacts as well as to mitigate expected impacts.

Mitigation measures include:

M-1: Restorative planting of 0.56 acre of former US Route 101 roadbed alignment. Once the planting has become established, this area will be removed from the California Department of Transportation easement and transferred back to the California Department of Parks and Recreation.

M-2: To offset the impacts to the trees where construction occurs within the structural root zone, mitigation will be provided to increase the amount of invasive plant removal. A contract with the California Conservation Corps will be established to provide 300 hours a year for four years (three days each year for a crew of twelve, the minimum crew size). Crew to be directed at the discretion of the California Department of Parks and Recreation.

The following avoidance and minimization measures will be implemented for work in the park:

- An arborist shall be present to monitor any ground disturbing construction activities.
- All excavation below the finish grade within a setback equal to three times the diameter of any redwood trees shall be done with shovels, pick axes, or pneumatic excavator or other methods approved by the construction engineer to minimize

disturbance or damage to the roots with the exception of culvert work at PM 1.18, 1.28, 1.34 and 1.35. Mechanized equipment can be used at these locations upon approval of the construction engineer.

- The contractor will be required to use a pneumatic excavator (such as an air spade) while excavating the soil within the structural root zone of redwood trees to minimize physical injury to the tree roots.
- Smaller roots less than 2 inches in diameter that must be cut shall be cut cleanly with sharp instrument in order to promote healing.
- The structural section for new pavement shall consist of Cement Treated Permeable Base (CTPB) to minimize the thickness of the structural section, provide greater porosity, minimize compaction of roots, and minimize thermal exposure to roots from Hot Mix Asphalt paving.
- After construction, the 1.5 :1 cut-slope area between PM 1.35 and PM 1.37 will be replanted. After tree removal, but prior to excavation of the cut-slope areas, the upper four to six inches of duff and native soil (topsoil) will be set aside for placement on finished fill slopes to provide the nutrients and a seed bank for natural revegetation.
- To help minimize potential stress on the redwood trees during construction, watering will be provided. In areas where roadway excavation will take place below the finish grade within the structural root zone of redwoods 30 inches in diameter or larger, watering equivalent to 1/2 inch depth to an area defined as from the edge of existing pavement to 25 feet beyond the edge of pavement shall be performed. Watering to be performed not more than 24 hours after the roadway excavation work at a site and shall occur weekly thereafter between the dates of June 1st and September 30th.
- Caltrans will adhere to the California Department of State Parks and Recreation Commission Statement of Policy (Policy 11.4) which states, “In order to maintain the genetic integrity and diversity of native California plants, all transplant and propagation in the North Coast Redwoods District will be from the local populations (preferably from within the same stand). For the purpose of this policy, local is defined as being from the immediate project area (as close as possible, but generally less than one mile).”

- In areas where new embankment is to be constructed to protect roots and promote air circulation the following measures shall be used:
 - Any duff layer shall be raked off the area within the clearing limits, stored, and replaced as erosion control. For areas within the structural root zone of redwoods thirty inches in diameter and greater, the duff will be hand raked.
 - A 0.75 foot thick layer of Class 1, Type A permeable material shall be placed and compacted as the first lift of the fill to increase water infiltration and air circulation. (In areas next to the shoulder hinge point it might not be possible to provide this much depth. In those cases, as much as feasible will be placed.)
 - In locations where ≥ 4 inches of fill would be placed next to the trunk of a tree ≥ 18 inches in diameter, a brow log shall be used to keep the soil from the tree trunk to increase air circulation.

Additional minimization measures utilized throughout the project limits include:

Equipment staging areas/storage areas will be on the paved roadway or on existing unvegetated gravel/paved pullouts so there will be no staging in sensitive natural communities.

Special provisions in the contract will state that no heavy equipment will be staged or parked within the drip line of mature trees in unpaved areas.

To avoid impacts to nesting migratory birds, vegetation removal will occur between September 30 and March 1. If this is not feasible, a qualified biologist will conduct a preconstruction bird survey to ensure that birds are not nesting in any of the vegetation to be removed. This survey would be conducted not more than seven days prior to the vegetation removal. If birds are nesting, the nest site will be designated an Environmentally Sensitive Area and a 100-foot buffer area around the nest established and the nest left alone until nesting is complete.

With the exception of a few trees being used as brow logs to protect the trees from fill, trees and shrubs cleared from the project area will be put into a chipper and the chips distributed

onto the finished slopes as mulch where feasible. All areas of disturbed soil will be further stabilized with weed-free mulch after planting if needed.

The majority of disturbed area will be replanted (see Appendix J).

See sections under Wetlands and other Waters, Plant and Animal Species, and Threatened and Endangered Species following below.

2.3.2. Wetlands and Other Waters

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers with oversight by the U.S. Environmental Protection Agency (EPA).

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds that: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the Department of Fish and Game (DFG) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify DFG before beginning construction. If DFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. DFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the ACOE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the DFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details.

Affected Environment

Information for this section is derived from the Natural Environment Study (Caltrans, 2008). The South Fork Eel River flows parallel to Highway 101 within the project limits. This 105 mile River flows from its headwaters at Cahto Peak near Laytonville in Mendocino County to the confluence with the mainstream of the Eel River near Weott in Humboldt County. The South Fork Eel River Basin drains about 689 square miles. Additionally, three named watercourses cross under US Route 101 within the project limits: Durphy Creek, North Creek, and Laurel Creek. Durphy Creek is a perennial stream supporting Coho salmon (a state and federally listed species), Chinook salmon (a federally listed species), and Northern California steelhead trout (a federally listed species) draining a watershed of about 2.15 square miles. The creek flows about two and half miles from its headwaters northwest of Richardson Grove to its confluence with the South Fork Eel, flowing through a 5 feet high by 10 feet wide concrete box culvert under US Route 101 at PM 1.62. North Creek is a seasonal stream about three quarters of a mile in length which drains about 115 acres. This seasonal

stream supports foothill yellow-legged frog (*Rana boylei*), a State species of concern and crosses under US Route 101 in a culvert at PM 1.78. Laurel Creek is also a seasonal stream about 3,470 feet in length which drains a watershed of about 127 acres. This creek crosses under US Route 101 via a culvert at PM 1.98.

Six other culverts within the project limits at PM 1.18, 1.28, 1.34, 1.35, 1.78, and 2.10 are proposed for improvements (See Figure 9). All but the last two locations are 18-inch culverts. The culvert at PM 1.78 is a 48-inch culvert and the culvert at PM 2.10 is 24 inches. These culverts convey water from existing channels under the highway. None of these channels are fish-bearing; neither do they contain special aquatic sites (pools, riffles) within the project limits.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

No work is proposed in the South Fork Eel River, or in the three named streams found within the project limits. No work in wetlands is proposed for the project. There are no fish passage issues with the proposed culvert work.

The project would result in minor temporary impacts and minimal permanent impacts to Waters of the U.S. due to the culvert improvements. Work at the six culvert locations includes lengthening the culverts, replacing the culverts at PM 1.28, 1.35 and 2.10 with 24-inch culverts, replacing the culvert at PM 1.34 with an 18-inch culvert, and extending an existing berm to direct water into down drain which will connect to the existing 48-inch culvert at PM 1.78. Work at the culvert at PM 1.18 includes replacing the existing headwall with a drainage inlet and maintaining the existing pipe in use. Work would also include constructing new inlet headwalls at PM 1.28, 1.34, 1.35 and 2.10. and extending the cross drains. The existing headwalls would be demolished and removed and then rebuilt back away from the roadway edge by three to five feet depending upon the location. Construction of the headwalls would require disturbing the soils to a depth of three to five feet and reshaping the drainage channel entrances. The extension of the inlets would involve adding additional pipe to the culvert pipe already in place. At PM 2.10, the existing culvert will be abandoned in place and a conduit installed to provide a separate accommodation for a private

water line. The new culvert will be installed adjacent to the abandoned culvert and a new down drain and rock slope protection (RSP) dissipater would be placed at the new culvert to intercept the roadway drainage currently flowing over the fill slope.

The proposed improvements would require temporary soil and vegetation disturbance in a 20 feet x 20 feet (400 square feet) area at both the inlet and outlet at each of the five culverts (construction of the down drain would not require this disturbance). It is expected that minor amounts of sediment discharge due to these culvert improvements are unavoidable. To maintain water quality and to minimize the movement of soils and sediment both into and within the project watercourses, effective erosion and pollution control measures will be developed and implemented. No tree removal would be required. Additional fill would be added to the uplands adjacent to the roadway shoulders perpendicular to the culverts.

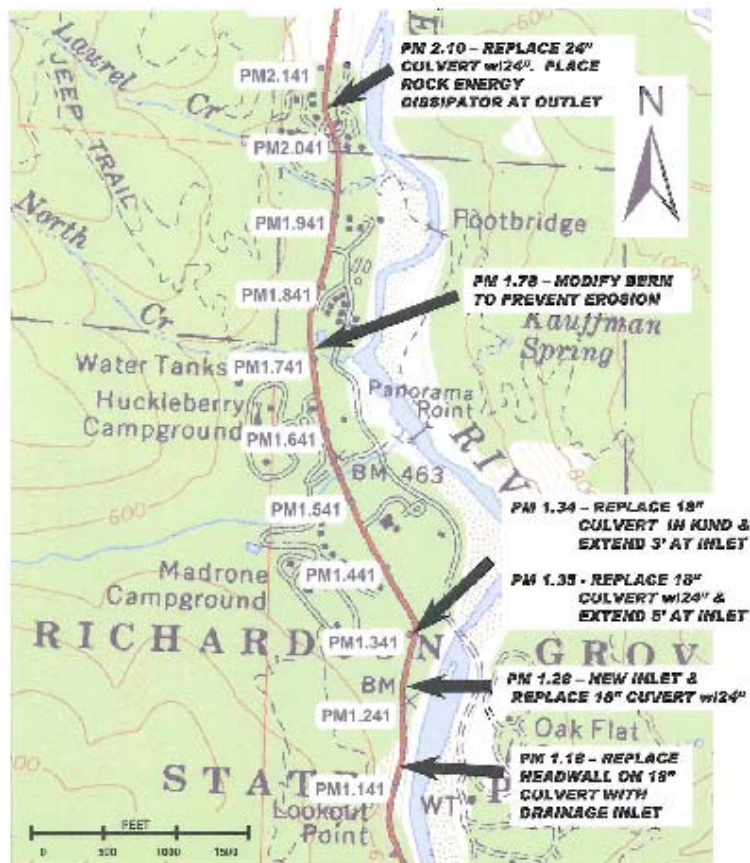
Installation of applicable Best Management Practices (BMPs) to stabilize all bare soil areas over both the short-term and long-term, minimize adverse effects to water quality, aquatic habitat, and listed fishes, and would ensure that impacts from erosion would be minimal.

The primary construction staging areas will be in the pull-outs to the immediate north and south of the project area along US Route 101, however, the contractor may arrange additional staging areas on private property nearby. The pullout to the north of the project area on US Route 101 is adjacent to the South Fork Eel River.

Permanent impacts would result from lengthening the culverts from 3 to 5 feet and are expected to be minimal. There would be a beneficial impact resulting from the improvements at PM 1.78 which would improve water quality by reducing the erosion that was occurring. Temporary impacts would occur during the replacement of the culverts and construction of the headwalls.

Permits for the proposed culvert improvement work would be required from the U.S. Army Corps of Engineers, California Department of Fish and Game, and the Regional Water Quality Control Board. An on-site meeting was held June 30, 2008 with staff from California Department of Fish and Game, Regional Water Quality Control Board, and Army Corps of Engineers to discuss the project.

Figure 9 Culvert Improvements



Garberville USGS 7.5 Minute Quadrangle T5S, R3E, S 11 & 12

Avoidance, Minimization and/or Mitigation Measures

Installation of applicable Best Management Practices (BMPs) to stabilize all bare soil areas over both the short-term and long-term, minimize adverse effects to water quality, aquatic habitat, and listed fishes, and would ensure that impacts from erosion would be minimal.

All work in drainages will take place between June 1 and October 15 to avoid sediment discharge and to control erosion.

Any debris and sediment will be contained within the work site.

Excess material excavated from the work site will be disposed of off-site at an approved disposal site away from any stream course or reused as fill onsite.

There will be a one year plant establishment period after the first year of planting that would consist of watering, weeding, and replanting if necessary. Following that would be a three year monitoring period that would include weeding. Weed removal will be a necessary component of the revegetation effort. Weed removal in the project area will utilize physical control methods (e.g., hand pulling) to remove non-native invasive species.

At the end of each work shift, any vehicles stored within 150 feet of the Ordinary High Water Mark of any drainage facilities and watercourses will have containment placed beneath the drip zone when left overnight. Any leaks will be immediately controlled with absorbent mats and repaired before the equipment operates again. Clean up of petro-chemical drips will occur as soon as they are observed. All equipment shall be monitored daily for chemical leakage. To offer protection from storm events, Caltrans shall require monitoring for storm events and moving equipment accordingly.

Silt fences and fiber rolls will be placed to control sediment discharge, thereby minimizing sediment that could be released into receiving waters.

Silt fences and fiber rolls will be applied to exposed soil areas for over-wintering protection from erosion.

No concrete washing or water from concrete will be allowed to flow into waterways and no concrete will be poured within flowing water in the waterways. Water that has come into contact with setting concrete will be pumped into a tank and disposed of at an approved disposal site.

The contractor will be required to develop and implement a Water Pollution Control Plan or Stormwater Pollution Prevention Plan identifying site-specific best management practices and emergency spill controls.

2.3.3. Plant and Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to plants and wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Game (DFG) are responsible for implementing these laws. USFWS and DFG also share regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species Section below in this document for detailed information regarding these species.

This section discusses all the other special-status plant and wildlife species, including DFG fully protected species and species of special concern, USFWS candidate species, and the non-listed California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also

subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

Additional Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the Fish and Game Code
- Sections 4150 and 4152 of the Fish and Game Code

Affected Environment

Information for this section was derived from the Natural Environment Study (Caltrans, 2008). The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants Database 9-Quad search was also used to determine the presence of rare plants that might be in the project area. Floristic surveys were conducted in April and July 2007 (see NES, Appendix I).

Although the CNPS Inventory lists a number of rare plants in the 9-Quad area which includes the project area, the floristic surveys conducted on July 26, 2007 only found one rare plant population in the project limits, the Sticky pea (*Lathyrus glandulosus*) (See Figure 4). This population of sticky pea is CNPS List Ranked 4.3 (limited distribution in California, watch list; not very endangered in CA); State Rank S3.3 (21-80 occurrences or 3,000-10,000 individuals, or 10,000-50,000 acres); Global Rank G3 (same definition as the State Rank). The sticky pea is only known to occur in Humboldt and Mendocino Counties and is endemic to California (not found outside of CA). The occurrence within the project limits is in the middle of the species' range.

A query of the California Natural Diversity Database (CNDDDB) was conducted for the project area and several special status species were reported to have occurred near the project area. Of the numerous species listed in the CNDDDB in the 9-Quad Area, suitable habitat is present in the project limits for the following species: northern spotted owl (*Strix occidentalis caurina*), Pacific fisher (*Martes pennanti pacifica*), marbled murrelet (*Brachyrampus marmoratus*), bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), pallid bat (*Androzous pallidus*), foothill yellow-legged frog (*Rana boylei*), southern torrent salamander (*Rhyacotriton variegatus*), western pond turtle (*Actinemys marmorata*), Coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), and Northern California steelhead (*Oncorhynchus mykiss*).

The northern spotted owl, marbled murrelet, bald eagle, Pacific fisher, Coho salmon, Chinook salmon, and Northern California steelhead are discussed in the listed threatened and endangered species section of the document.

Osprey:

The osprey is a California Department of Fish and Game Species of Concern. This bird nests within 15 miles of oceans, bays, fresh-water lakes, and larger streams and rivers where plentiful fish can be found. The large trees in Richardson Grove may provide some elements of suitable habitat. There is a nest located in a tree off the highway that has been occupied during the past several years located near PM 1.94 (see Figure 4).

Yuma Myotis Bat:

The Yuma myotis bat is common and widespread in California and is found in a variety of habitats. In Richardson Grove, there is a hollow redwood tree about 25 feet from the edge of the roadway near PM 1.49 which provides a maternity roost for a colony of Yuma myotis bats. The female bats give birth from May to July and the pups are dependent upon the female for a six week period (see Figure 4).

Pallid Bat:

The pallid bat is a California Department of Fish and Game Species of Concern. This species can be found in deserts, grasslands, shrublands, and forests. They are most common in open, dry habitats with rocky areas for roosting. There is a historical record of an individual bat collected in Richardson Grove in 1936.

Foothill Yellow-legged Frog:

The foothill yellow-legged frog is a California Department of Fish and Game Species of Concern. This species can be found in partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. These frogs require cobble-sized substrate for egg-laying. The CNDDDB shows a 2005 observation of this species in North Creek just west of US Route 101.

Southern Torrent Salamander:

The southern torrent salamander is a California Department of Fish and Game Species of Concern. It can be found in coastal redwood, Douglas fir, mixed conifer, montane riparian, and montane hardwood –conifer habitats in cold, well-shaded, permanent streams and seepages. Suitable habitat is present in the drainages upstream and downstream of the four 18-inch culverts located at PM 1.18, 1.28, 1.34 and 1.35 within the project limits (See Figure 9). The outlet of the culvert at PM 1.18 is perched on a steep slope and would allow salamanders, if present, to move downstream only. The culvert at PM 1.34 is also perched about one foot above the slope making it difficult for any salamanders present to move upstream. The culverts at PM 1.28 and PM 1.35 outlet at grade and thus are not a barrier to salamander mobility.

Western Pond Turtle:

The western pond turtle is a California Department of Fish and Game species of concern. It can be found in permanent or semi-permanent freshwater aquatic habitats. It has been found in the South Fork Eel River and its tributaries in the vicinity of Richardson Grove State Park.

During spring or early summer, female pond turtles lay eggs in depressions they dig in stream banks or within 300 feet of a stream.

Green Sturgeon:

The green sturgeon (*Acipenser medirostris*) is a Federal Endangered Species Act “Species of Concern” but the northern distinct population segment consisting of coastal spawning populations from the Eel River north to the Rogue River in Oregon is not currently listed. Green sturgeons are known to occupy the Eel River and its tributaries including South Fork Eel River. There is suitable spawning habitat in the river adjacent to the project area.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

No work is proposed in the South Fork Eel River, or in the three named streams found within the project limits. No work in wetlands is proposed for the project. Fish are not present in any of the drainages proposed for culvert improvements. There are no fish passage issues with the proposed culvert work.

The sticky pea population would not be impacted by the proposed project as the area surrounding the population will be designated in the project plans and on the ground as an Environmentally Sensitive Area (ESA). This ESA will be fenced as a first order of work.

The maternity roost of Yuma myotis bats could possibly be impacted by construction activities. If overly disturbed, females could abandon the roost. For night work construction, no portable lights will be used within 100 feet of the roost tree during the period that dependent pups are likely to be present (May through August). Lights on equipment will not substantially exceed the level of disturbance of the existing traffic headlights. Construction activities will take place within 100 feet of the roost tree for no more than 2-3 hours at a time for a period of three to four days. Therefore, this project is not likely to adversely impact these bats or their habitat.

Although the large trees with Richardson Grove may provide some elements of suitable habitat for osprey and pallid bats, these trees would not be substantially impacted by the

proposed project. The noise and activity disturbance generated by construction is not expected to substantially exceed existing disturbance levels from the highway and campground. For night work construction, lighting will be directed downward toward the roadway and will not substantially exceed the level of disturbance from existing traffic. Thus, the proposed project would not adversely impact osprey, pallid bats, or their habitat.

Foothill yellow-legged frogs have been observed in North Creek. This creek is within the project limits, but no work in the bed, bank, or channel of this stream is proposed. The drainage improvement being proposed at this location is to extend the existing berm to divert water to a new twelve inch down drain which will connect to the existing 48-inch culvert. This work would not adversely affect the frog. Work is being proposed for five culverts within the project limits. The upstream and downstream areas of these drainages may have suitable habitat for the frog. The disturbance at these areas will be less than 500 square feet at each culvert and the inlets will be returned to their original contours. There would be minimum permanent habitat disturbance. Any impacts to the yellow-legged frogs would be minor and temporary. The proposed project would not result in substantial adverse impacts to the foothill yellow-legged frog or its habitat.

Suitable habitat for the southern torrent salamander may be present in the areas near the inlets and outlets of the four 18-inch diameter culverts proposed for improvements. The perched culvert outlets at PM 1.18 and PM 1.34 which are a barrier to salamander mobility would not change. The work proposed for the culvert at PM 1.18 does not include any work at the outlet. While the culvert at PM 1.34 is being replaced, the culvert was placed in a shallow trench, presumably to minimize impacts to the roots of adjacent tree. To minimize impacts to these roots, the culvert will be replaced basically in place. Culvert at PM 1.28 will be replaced and will outlet at grade as they currently do so these culverts would continue to present no barrier to salamander mobility. The disturbance at each culvert inlet and outlet area would be less than 500 square feet and the areas would be returned to their original contours. There would be minimum permanent habitat disturbance. Any impacts to the salamander would be minor and temporary. The proposed project would not adversely impact the southern torrent salamander or its habitat.

All of the culvert work proposed for the project involves small, seasonal drainages which is unsuitable habitat for the western pond turtle. However, work at the culverts located at PM 1.28 and 1.35 includes some excavation on the river side of US Route 101 within 300 feet of the South Fork Eel River. Female pond turtles could build nests in this area. While there will be some work performed in suitable habitat, there will be minimal work involving heavy equipment. Any trenching for the culvert replacements would be done from the paved roadway. Any impact to the western pond turtle would be minor and temporary. The proposed project would not result in adverse impacts to the western pond turtle or their habitat.

No work will be done within the bed, on the bank, or in the channel of South Fork Eel River. No riparian vegetation will be removed. Therefore, this project would not adversely impact green sturgeon.

Avoidance, Minimization, and/or Mitigation Measures

ESA fencing will be installed during construction to protect the sticky pea population from potential construction impacts.

For night work construction, no portable lights will be used within 100 feet of the roost tree during the period that dependent young bat pups are likely to be present (May through August).

Construction activities will take place within 100 feet of the roost tree for no more than 2-3 hours at a time for a period of three to four days.

For night work construction, lighting will be directed downward toward the roadway and will not substantially exceed the level of disturbance from existing traffic.

2.3.4. Threatened and Endangered Species

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See

also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The California Department of Fish and Game (DFG) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by DFG. For projects requiring a Biological Opinion under Section 7 of the FESA, DFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

Affected Environment

Information for this section was derived from the Biological Assessment (Caltrans, 2008) and the Natural Environment Study (Caltrans, 2008). A Species List of proposed and listed federal species was obtained from US Fish and Wildlife Service dated March 24, 2008 (see Appendix E). Of this list, the project limits and immediate vicinity contains suitable habitat

for the following species: Northern California steelhead, Coho salmon, Chinook salmon, marbled murrelet, northern spotted owl, pacific fisher, and bald eagle. Designated Critical Habitat for the marbled murrelet is also identified on the list. For the remaining animal species on the list provided by US Fish and Wildlife Service, one or more essential habitat elements are absent from the proposed project area and it is not anticipated that these species are present within the project limits.

The Northern California steelhead is federally listed as threatened and is a California Department of Fish and Game species of concern. This species spends its adult life in the Pacific Ocean but spawns in coastal streams and rivers over gravel beds. There is suitable habitat present for this species in Durphy Creek, which flows through a concrete box culvert under US Route 101 within the project limits. The steelhead are also present in the South Fork Eel River, which is adjacent to, but beyond the project limits.

The Coho salmon is federally and state listed as threatened. The Coho spends its adult life in the Pacific Ocean, but spawns in coastal streams and rivers, over gravel beds. There is suitable habitat present for this species in Durphy Creek, which flows through a concrete box culvert under US Route 101 within the project limits. The Coho are also present in the South Fork Eel River, which is adjacent to, but beyond the project limits.

The Chinook salmon is federally listed as threatened. The Chinook spends its adult life in the Pacific Ocean, but spawns in coastal streams and rivers, over gravel beds. There is suitable habitat present for this species in Durphy Creek, which flows through a concrete box culvert under US Route 101 within the project limits. The Chinook are also present in the South Fork Eel River, which is adjacent to, but beyond the project limits.

The marbled murrelet is federally listed as a threatened species and state listed as endangered. It is a small seabird in the auk family that is found on the Pacific Coast from southern Alaska to just south of San Francisco Bay in California. The marbled Murrelet spends most of its life at sea, but comes inland for the nesting period. The marbled murrelet nests in mature Douglas fir and redwood forest communities characterized by large trees, multiple canopy layers, and moderate to high canopy closure within flying distance of the ocean, typically about 35-50 miles. Breeding marbled murrelets use river corridors as

flyways between foraging areas in the Pacific Ocean and inland nesting areas. The South Fork Eel River corridor is suitable as migration habitat for Murrelets adjacent to US Route 101.

On May 24, 1996 US Fish and Wildlife Service designated critical habitat for the marbled murrelet which includes 693,200 acres in northern California which represents 17.8 percent of the total area designated as critical habitat in the Pacific northwest. Of this, 175,500 acres are State-owned lands in northern California, including 39,958 acres in southern Humboldt County. Designated critical habitat within Richardson Grove State Park is included in unit CA-06-a which encompasses 10,602 acres located in southern Humboldt and northern Mendocino counties. The remainder of this unit is owned and managed by the Bureau of Land Management. Critical habitat in unit CA-06-a comprises approximately six percent of designated critical habitat for the marbled murrelet on State lands in northern California.

Primary constituent elements of the designated critical habitat for the marbled murrelet consist of physical and biological features that are essential to the conservation of the species within areas occupied by the species at the time of listing that may require special management considerations and protection. These include such factors as space for individual and population growth and for normal behavior, food, water, air, light, minerals, cover or shelter, sites for breeding and rearing of offspring, and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

For the marbled murrelet, the US Fish and Wildlife Service has identified the following as primary constituent elements: 1) forested stands containing large-sized trees, generally more than 32 inches in diameter with potential nesting platforms at sufficient height (generally greater than or equal to 33 feet in height); and 2) the surrounding forested area within a half mile.

The northern spotted owl is federally listed as threatened and is listed by the California Department of Fish and Game as a species of concern. This species is found on the Pacific coast from southwestern British Columbia to San Francisco in California. Nesting and roosting habitat for this species typically includes a diverse multi-layered tree canopy

consisting of large over story trees over 30 inches in diameter with a moderate to high canopy closure (60 to 80 percent); a high incidence of large trees with various deformities (e.g., large cavities, snags, mistletoe infestations); large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for flight. This type of habitat is present in the project area; however, there is no designated critical habitat for the northern spotted owl within the project area. A search of the California Natural Diversity Database shows that the nearest known nest location is about one half mile from the project area.

The pacific fisher is a federal candidate for listing and a California Department of Fish and Game Species of Concern. The fisher is a member of the weasel family, and is related to mink, otters, and martins. The fisher inhabits old-growth forests and once ranged from British Columbia through Northern California and the Sierra Nevada. The fisher requires intermediate to large tree stages of dense coniferous forests and deciduous-riparian areas with a high percent of canopy closure. There is suitable habitat within the project limits. The fisher is intolerant of high human activity levels.

The bald eagle, recently delisted by the US Fish and Wildlife Service, is state listed as threatened. They nest and roost in large diameter trees or snags near large bodies of water where prey is abundant. There is suitable habitat present within the project limits.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

Northern California steelhead, Coho salmon, and Chinook salmon are likely present in Durphy Creek; however no work will be done within the bed, bank, or channel of this stream. These species are also present in the South Fork Eel River but no adverse impacts resulting from the project are anticipated to occur to the South Fork Eel River. It was determined that there would be “No Effect” to these species.

Although there is some suitable habitat for the pacific fisher within the project limits, the disturbance generated by the current levels of human activity by the campgrounds, the highway, and the residences make it low value as fisher habitat and they are not likely to be

present within the project limits. If present, the additional noise and activity disturbance caused by construction would not substantially exceed the existing disturbance levels. During any night work, lighting would be directed downward toward the roadway and would not substantially exceed the level of disturbance caused by the existing traffic headlights. Therefore, the proposed project will not adversely affect the pacific fisher. Should the fisher become listed prior to or during construction, Section 7 consultation would be reinitiated.

Although the large trees within the project limits in Richardson Grove State Park may provide some elements of suitable habitat for the bald eagle, these trees will not be removed by the proposed project. Construction activity is not expected to substantially exceed the noise and activity level from the existing highway and campground. During any night work, lighting would be directed downward toward the roadway and would not substantially exceed the level of disturbance caused by the existing traffic headlights. Therefore, the proposed project will not adversely affect bald eagles or their habitat.

On September 17, 2007, a site visit with Ray Bosch and Bill McIver of US Fish and Wildlife Service was held to discuss potential impacts from the project. On May 8, 2008 a site visit with Scott Bauer and Michael Van Hatten of California Department of Fish and Game was held to discuss the potential impacts to the state listed marbled murrelet. A Biological Assessment was prepared to comply with Section 7 of the Federal Endangered Species Act to discuss the impacts to marbled murrelet, northern spotted owl, and designated critical habitat for the marbled murrelet. The Biological Assessment that was prepared for this project did not include bald eagle, Coho, Chinook, or steelhead species since no adverse effects to these species are anticipated to occur as a result of the project.

The US Fish and Wildlife Service issued a Biological Opinion on January 15, 2009. The US Fish and Wildlife Service determined that the proposed project would not result in any marbled murrelet or northern spotted owl nesting habitat being removed or degraded and the likelihood that the project would result in direct mortality of marbled murrelets or northern spotted owls, particularly to young or the loss of eggs is discountable. The Service also concurred that the project may modify, but is not likely to adversely modify designated critical habitat for the marbled murrelet. Based on the information in the Biological Opinion,

California Department of Fish and Game determined that a Consistency Determination for impacts to marbled murrelets was not required. Specific information on the northern spotted owl, marbled murrelet and its designated critical habitat is discussed below.

Marbled murrelet:

The effects of the project on marbled murrelets can occur in two ways: adversely modifying the habitat and causing disturbance during the breeding season (March through September). The former includes removing potential nest trees or removing trees that provide cover for potential nesting platforms. Disturbance is defined as noise in excess of ambient levels in or near suitable nesting habitat or as the reaction of nesting birds to human presence or activity, resulting in disruption of essential breeding behavior.

Although the large redwood and Douglas fir trees within the project limits in the park may provide elements of suitable nesting habitat, these trees will not be substantially impacted by this project. None of the trees that are proposed to be removed are potential nest trees, nor do they provide cover for potential nesting platforms. The US Fish and Wildlife Service concurs in the Biological Opinion dated January 15, 2009 that no marbled murrelet nesting habitat will be removed or degraded by the proposed project (page 47 of the Biological Opinion).

Noise, lights, and activity disturbance generated by the construction of this project could disturb breeding and migration patterns in the project area for one breeding season. Construction disturbance would be limited to the immediate vicinity of the roadway and could potentially disrupt the breeding behavior by interfering with courtship, causing nest abandonment, causing altered parental care such as failure to feed young; or causing premature dispersal of juveniles. The murrelets may also use the river corridor for daily migration to and from their nests at sunrise and sunset. The construction activities that have the most potential to disturb marbled murrelets during the breeding season are constructing the retaining wall, cut and fill activities, culvert work, and paving work.

The construction activity will not substantially exceed the existing disturbance levels present with the roadway traffic and the campground activities. Any night work performed will have

the necessary lighting directed downward toward the roadway and will not substantially exceed the level of disturbance of the existing traffic headlights. Based on the estimated levels of noise resulting from construction of the proposed project and taking into account the existing sound levels, the US Fish and Wildlife Service stated in the Biological Opinion for this project that construction may result in harassment of marbled murrelet that nest within 825 feet of the project area. This would comprise an area of approximately 229 acres and includes the campgrounds and associated visitor use areas which already experience moderate to high disturbance. While there is no known nest sites within Richardson Grove State Park, it is estimated that at least one nesting pair of marbled murrelets within the affected disturbance area of 229 acres of suitable habitat could be subjected to harassment as a result of the project.

There is not much known about the population numbers for marbled murrelet in this area. Consultation with US Fish and Wildlife Service staff determined that mitigation would be desired to offset any impacts to this species. It was determined to provide mitigation that helps in the conservation of this species. A two-year survey will be conducted in association with State Parks to document presence of any marbled murrelet in the project area. Additionally, the proposed project will provide an enhancement feature for the habitat by reducing the numbers of predators in the vicinity of the project area.

Nest predation by ravens (*Corvus corax*), American crows (*Corvus brachyrhynchos*), and steller's jays (*Cyanocitta stelleri*) is the primary cause of marbled murrelet nest failure. Generically termed "corvids", these birds are known to take both eggs and chicks from the nest. Studies have suggested that corvid density is especially high in campgrounds as they often scavenge human garbage and discarded food around picnic tables and elsewhere. Studies have found that reducing the food sources adjacent to areas of listed species activity by using corvid-proof garbage cans can be effective in discouraging corvids (Liebezeit and George, 2002). Coordinating with Richardson Grove State Park Ranger, Tim Wallace, it was determined that thirteen garbage cans in the campgrounds currently were of a design that did not satisfactorily repel corvids.

Caltrans will provide California Department of Parks and Recreation corvid-proof waste receptacles, dumpsters, food lockers, recycle bins, and drain grates to replace the existing facilities near parking, picnic, and camping areas in Richardson Grove State Park.

Due to the sensitivity of the species, it was determined that the project “may affect, and is likely to adversely affect” marbled murrelet.

Designated Critical Habitat:

The removal of some 26 second-growth redwood and Douglas fir trees would amount to less than 0.5 percent of the estimated potential (current and future) old-growth habitat available to nesting marbled murrelet within a half mile of the project area. The largest Douglas fir being removed by the project is 24 inches in diameter. The largest redwood to be removed is 19 inches in diameter. The trees proposed to be removed are not large or old enough to contain suitable nesting platforms, thus their removal would not result in the loss of any current marbled murrelet nesting habitat. The trees adjacent to the roadway do not provide ideal habitat for the marbled murrelet as the adjacent roadway opens the tree canopy, which provides less protection from predators and is not a preferred location for young fledglings.

The existing woodlands containing a mix of redwoods, Douglas fir and tan oaks constitute one of the primary constituent elements of the designated critical habitat for marbled murrelet (surrounding forested area within half mile of suitable forests with trees over 32 inches in diameter). Although there will be impacts to this surrounding forested area, the majority of trees to be removed are understorey tan oak trees. Approximately ¼ acre of this woodland would be removed as a result of the project. Their quality as such, however, is reduced by their close proximity to the highway, businesses, and residences.

The US Fish and Wildlife Service concurred that the removal of proposed vegetation is unlikely to substantially alter the canopy characteristics of the forest in Richardson Grove State Park. The US Fish and Wildlife Service also concurred that the project may modify, but is not likely to adversely modify designated critical habitat for the marbled murrelet.

Northern spotted owl:

Although the large trees within the project limits in the park may provide elements of suitable nesting habitat, these trees would not be substantially impacted by this project. The habitat within the project limits is not high quality due to the presence of the highway and campgrounds. The noise, light, and activity disturbance generated by the construction of this project will not substantially exceed the existing disturbance levels present with the roadway traffic and the campground activities. Based on the estimated levels of noise resulting from construction of the proposed project and taking into account the existing sound levels, the US Fish and Wildlife Service stated in the Biological Opinion dated January 15, 2009 for this project that construction may result in harassment of northern spotted owls that nest within 825 feet of the project area. This would comprise an area of approximately 229 acres. Any night work performed will have the necessary lighting directed downward toward the roadway and will not substantially exceed the level of disturbance of the existing traffic headlights. It is not anticipated that construction activities would result in substantial adverse impacts to any known nesting sites.

Approximately ¼ acre of the woodland would be removed as a result of the project. It may take ten years or more for the trees that will be replanted to reach the size of the ones that are to be removed for this project. These woodlands are marginal dispersal and foraging habitat for the northern spotted owl. Their quality as such, however, is reduced by their close proximity to the highway, businesses, and residences.

Due to the sensitivity of the species, it has been determined that the proposed project “May Affect, and is likely to Adversely Affect” northern spotted owls.

The No Build Alternative would not result in tree removal or construction impacts.

Avoidance, Minimization, and/or Mitigation Measures

Numerous measures have been incorporated into the project to avoid and minimize impacts as well as to mitigate expected impacts.

Mitigation Measures include the following:

M-1: Restorative planting of 0.56 acre of former US Route 101 roadbed alignment. Once the planting has become established, this area will be removed from the California Department of Transportation easement and transferred back to the California Department of Parks and Recreation.

M-3: A two year survey by a qualified biologist to document the presence of any marbled murrelet within the project limits and vicinity will be performed. Surveying potential breeding habitat to identify potential nesting areas is identified as a recovery action in the Marbled Murrelet Recovery Plan (USFWS, 1997) and will aid in the recovery of the species by providing information to the US Fish and Wildlife Service about the population in inland nesting areas.

M-4: Caltrans will provide California Department of Parks and Recreation 11 corvid-proof waste receptacles, 30 dumpsters, 27 recycle bins, 175 food lockers, and 79 drain grates to replace the existing equipment near parking, picnic, and camping areas in Richardson Grove State Park.

Other avoidance and minimization measures include:

To minimize adverse noise impacts to migrating marbled murrelet during the breeding season (between March 24 and September 15) there will be no construction activity in the morning for a three-hour period starting one hour before sunrise until two hours after sunrise, then in the evening no construction activity in the three-hour period starting two hours before sunset until one hour after sunset.

For any night work construction, lighting will be directed downward toward the roadway and will not substantially exceed the level of disturbance from existing traffic.

An arborist shall be present during ground disturbing activities in the park to ensure compliance with the tree protection measures.

2.3.5. Invasive Species

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” Federal Highway Administration guidance issued August 10, 1999 directs the use of the state’s noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

Affected Environment

Several invasive plant species can be found within the project area. French broom (*Genista monspessulana*), Himalayan blackberry (*Rubus discolor*), fennel (*Foeniculum vulgare*), perennial sweetpea (*Lathyrus latifolius*), and yellow star thistle (*Centaurea solstitialis*) are all exotic invasive species and can be found along the highway corridor throughout Humboldt County including Richardson Grove. A number of common exotic grass and herb species can also be found along the highway shoulders in Richardson Grove.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

The project will result in approximately 1.07 acres of disturbed area. Some invasive plant species thrive in disturbed areas. Revegetation can minimize the likelihood of invasive species re-establishing, however it can also provide a seed source for new invasive species.

Most of the areas subject to vegetation removal and soil disturbance in the project area will be revegetated. Revegetation would consist of an application of local native mulch (the original topsoil including duff that was removed and stored from the cut slope areas and chips from trees and shrubs that are removed) for erosion control. This native mulch could contain seeds of existing invasive species that are present throughout the project limits. Thus, weed removal will be a necessary component of the revegetation effort. Weed removal in the project area would utilize physical control methods (e.g., hand pulling), and would be

conducted during the planting and plant establishment period (4 years) for non-native invasive species such as French broom, fennel, and perennial sweetpea.

None of the species on the California list of noxious weeds is currently used by Caltrans for erosion control or revegetation in this project. See the Revegetation proposal (Appendix J) for a species list of plants to be used in the revegetation effort.

The No Build Alternative would not result in any change to the existing vegetation.

Avoidance, Minimization, and/or Mitigation Measures

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the revegetation and erosion control included in the project will not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

Weed removal will be a necessary component of the revegetation effort. Weed removal in the project area will utilize physical control methods (e.g., hand pulling), and will be conducted during the planting and plant establishment period (4 years) for non-native invasive species such as French broom, fennel, and perennial sweetpea.

2.4 CUMULATIVE IMPACTS

Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the general project vicinity may result from residential, commercial, industrial, and highway development, as well as from agricultural development

and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

Identifying the major cumulative effects involves defining the impacts of the proposed action and other projects on affected resources and which effects on these resources are important from a cumulative impact perspective. The resources primarily affected by this project are State parklands, listed species (specifically marbled murrelet and northern spotted owl), and old growth redwood forest.¹³ The geographic scope of cumulative impacts varies by resource. For example, the boundaries for cumulative impacts for parklands is the US Route 101 corridor between Eureka and Willits while the boundaries for the impacts to listed species is the Eel River watershed.

Environmental Consequences

Impacts from the preferred alternative are discussed below.

Evaluation of potential cumulative impacts was approached two different ways. One analysis strategy was to look at Caltrans projects that have recently been completed, or are planned in a five mile radius north and south of the proposed project. These projects are listed below.

¹³ Old growth forest is typically a redwood forest that has not been logged and shows little or no evidence of disturbance.

¹⁶ <http://www.epa.gov/climatechange/endangerment.html>

*Chapter 2 – Affected Environment, Environmental Consequences,
and Avoidance, Minimization and/or Mitigation Measures*

<u>County/Route</u>	<u>PM</u>	<u>Project Name</u>	<u>Construction Start Date</u>
HUM 101	5.63	Replace Seal Joints on Bridge (406304)	2008
HUM 101	0.5/13.5	Culvert Replacement (451704)	2007
HUM 101	0.0/17.9	Maintenance Cold Planing (473104)	2006
HUM 101	8.4/137.0	Install Exit Signs (440404)	2006
HUM 101	2.4/65.3	Culvert Rehabilitation (404804)	2003
HUM 101	0.35/73.9	Install Culvert Markers (433804)	2003
MEN 101	1.54/106		
Hum 101	7.48/107.2	Sign Modifications (443704)	2006
MEN 101	31.7/105.1		
HUM 101	0.18/28.5	Install Reflective Pavement Markers (439504)	2003
MEN 101	92.45/100.0		
MEN 101	19.5/103.9	Install Exit Signs (440305)	2003
MEN 101	99.5/100.5	Slide Removal & Crib Wall Repair (444004)	2003
MEN 101	99.5/100.5	Slide Removal & Construct Rock Fence (446604)	2003
MEN 101	35.5/105	Metal Beam Guardrail Repair/Replace (435004)	2004
MEN 101	85.4/106.8	Maintenance Cold Plane & Surfacing (473004)	2006
MEN 101	99.5/100.5	Slide Removal & Retaining Wall Repair (470104)	2007
MEN 101	98.5/100.9	Realign Hwy and Construct New Bridges at Confusion Hill	2006

With the exception of the Confusion Hill Realignment project, the projects listed above were improvements to the existing roadway and did not result in redwood tree removal or other

substantial adverse impacts to redwoods or listed species. The Confusion Hill project did remove redwood trees. The four largest redwoods removed ranged from 35 inches to 39 inches in diameter. The Confusion Hill project was not within designated marbled murrelet critical habitat. Surveys conducted in 2004 and 2005 did not detect the presence of any marbled murrelets within or immediately adjacent to the project limits. While there were northern spotted owls detected in the survey conducted in 2004 and 2005, the nearest nest was ¼ mile from the project limits. The Confusion Hill project was the only project from the list above that required mitigation. None of the projects above required any take of State parklands.

The second approach for evaluating the potential for cumulative effects is to evaluate study areas for each of the three resource areas and determine what past, present, and reasonably foreseeable future projects in these study areas. The resource study area for parklands is the US Route 101 corridor from Eureka to Willits and includes the following State Parks: Fort Humboldt, Humboldt Redwoods, Benbow Lake, Richardson Grove, Standish Hickey, and Smithe Redwoods. This study area was selected because it is along the US Route 101 corridor that has the most potential for impact as a result of the project. Eureka would be the major destination for STAA trucks to the north. South of Willits land use is more urbanized and State parks are not located in the US Route 101 corridor, so Willits was selected for the southern boundary of the study area.

Past, present and reasonably foreseeable future projects that occur within one of the State parks listed above include one Caltrans culvert replacement project within Richardson Grove State Park, a culvert replacement project (451704) that occurred in 2007. The work occurred within the Department of Transportation easement and no property from the State park was required for completion of the project. There are no known Caltrans projects that have been identified in the foreseeable future that would impact any State parks in the study area. No known County projects or other private development projects have been identified that would impact State parklands in the study area in the foreseeable future.

The study area for marbled murrelet and northern spotted owl is the Eel River watershed which incorporates the South Fork Eel River, North Fork Eel River, and the Middle Fork Eel

River. It encompasses portions of State Routes 36 and 162 as well as portion of US Route 101. It includes the communities of Fortuna, Rio Dell, and Ferndale to the north and Willits to the south.

Past, present and reasonably foreseeable future projects in this area include The Confusion Hill US Route 101 Realignment project (construction completed in 2009), the proposed Willits Bypass Project (construction to begin in 2011), buildout in Brooktrails (no estimated date for construction), and second access to Brooktrails (no estimated date for construction). The Confusion Hill project impacted about 1.5 acres of foraging habitat and 0.4 acres of nesting habitat for northern spotted owl. No potential nesting trees for marbled murrelets were removed but there was construction within a stand of suitable habitat. There is no designated marbled murrelet critical habitat within the project area. Two year protocol surveys were conducted prior to construction and no detections of marbled murrelets were observed. Surveys conducted for the Willits Bypass project found two nesting pairs of northern spotted owls in the project area; however no marbled murrelets were detected. The Brooktrails area contains suitable habitat for northern spotted owl as well which could be affected with construction of the second access road and the buildout of Brooktrails. Immediately north and south of the project area there is some privately owned mature redwood forest, but the area has low potential for development due to the steep terrain. There are no known large developments being proposed for the area.

The study area for old growth redwood forest includes Humboldt and Mendocino Counties. In the proximity of the proposed project, the majority of old growth redwood forest areas are protected and managed by the State Park. The greatest impact on redwood forests has been from logging operations since the 1850s. Today, 85,000 acres of old growth redwood forest remain from the historic two million acres. Of this, over 70 percent is in public lands. Immediately north and south of the proposed project there is some mature redwood forest held in private ownership, but the area is not very developable due to the steep terrain and there are no known large developments being proposed for the area.

Past, present, and reasonably foreseeable future projects include the Confusion Hill US Route 101 Realignment project (construction completed in 2009). This project removed four

redwoods: two 35 inch diameter trees, one 37 inch diameter tree, and one 39 inch diameter tree. The culvert replacement project on US Route 101 within Richardson Grove State Park did not remove any old growth redwoods. The proposed project would not remove any old growth redwoods. There are six redwoods that would be removed by the project ranging in size from six to nineteen inches in diameter. Construction would occur within the structural root zone of old growth trees but these impacts are not anticipated to be substantial adverse impacts with the proposed minimization measures in place.

The impacts to parkland occurring as a result of the project are primarily temporary construction impacts resulting from noise, visual intrusions, and traffic delays. The addition of property to the transportation easement would be off set with the transfer of an equal amount of property to the park. There would be no substantial cumulative effects resulting from the project.

There are no known marbled murrelets in close proximity of the proposed project and the nearest northern spotted owl nest is 1/2 mile away. The proposed project will not adversely modify designated critical habitat for the marbled murrelet. Due to the minimal long term impacts to marbled murrelet, northern spotted owl, and the designated critical habitat, as well as the conservation and enhancement mitigation measures incorporated into the project, impacts to the listed species are not anticipated to result in substantial cumulative impacts.

The proposed project at Richardson Grove will not result in any removal of old growth redwood trees. There are six redwood trees that would be proposed for removal that range in size from four to nineteen inches in diameter. It is expected that the project would result in some impacts to the roots of larger redwood trees in Richardson Grove State Park, but these impacts are not anticipated to result in substantial adverse impacts with the proposed minimization and mitigation measures in place. With the incorporation of minimization and mitigation measures, it has been determined that the proposed project would not result in significant cumulative impacts.

Chapter 3. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EVALUATION

3.1 DETERMINING SIGNIFICANCE UNDER CEQA

The proposed project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA’s responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable Federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327. The Department is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or some lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to “significantly affect the quality of the human environment.” The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require the Department to identify each “significant effect on the environment” resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR

and mitigated if feasible. In addition, the CEQA Guidelines list a number of mandatory findings of significance, which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

3.2 DISCUSSION OF SIGNIFICANCE OF IMPACTS

3.2.1. Less than Significant Effects of the Proposed Project

Less than significant effects of the proposed project include impacts to old growth redwood trees, endangered species, aesthetics, cultural resources, impacts to the community and Richardson Grove State Park.

3.2.2. Significant Environmental Effects of the Proposed Project

No significant environmental effects are expected as a result of this project with the implementation of the stated special construction techniques.

3.2.3. Unavoidable Significant Environmental Effects

No unavoidable significant environmental effects are expected as a result of this project.

3.3 MITIGATION MEASURES FOR SIGNIFICANT IMPACTS UNDER CEQA

None

3.4 CLIMATE CHANGE

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with the emissions of GHG related to human activity that include carbon dioxide (CO₂), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level. Assembly Bill 1493 requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year; however, in order to enact the standards California needed a waiver from the U.S. Environmental Protection Agency (EPA). The waiver was denied by EPA in December 2007. See *California v. Environmental Protection Agency*, 9th Cir. Jul. 25, 2008, and No. 08-70011. However, on January 26, 2009, it was announced that EPA will reconsider their decision regarding the denial of California's waiver. On May 18, 2009, President Obama announced the enactment of a 35.5 mpg fuel economy standard for automobiles and light duty trucks which will take effect in 2012. On June 30, 2009, EPA granted California the waiver. California is expected to enforce its standards for 2009 to 2011 and then look to the federal government to implement equivalent standards for 2012 to 2016. The granting of the waiver will also allow California to implement even stronger standards in the future. The State is expected to start developing new standards for the post-2016 model years later this year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change. California, in conjunction with several environmental organizations and several other states, sued to force the U.S. Environmental Protection Agency (EPA) to regulate GHG as a pollutant under the Clean Air Act (*Massachusetts vs. Environmental Protection Agency et al.*, 549 U.S. 497 (2007)). The court ruled that GHG does fit within the Clean Air Act’s definition of a pollutant, and that the EPA does have the authority to regulate GHG. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under Section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆)—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing the EPA’s proposed greenhouse gas emission standards for light-duty vehicles, which were jointly proposed by EPA and the Department of Transportation’s National Highway Safety Administration on September 15, 2009.¹⁶

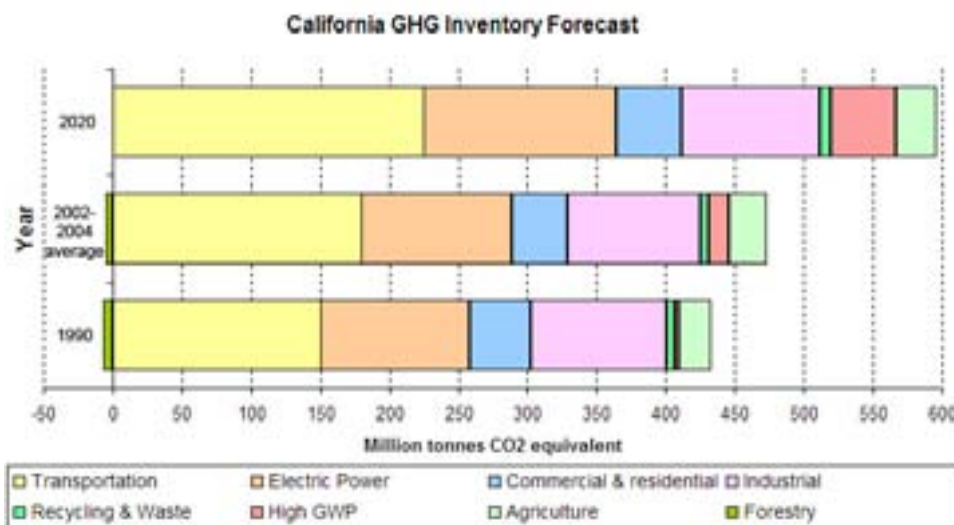
According to Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate change in CEQA Documents (Hendrix and Wilson, 2007), an individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its

incremental contribution combined with the contributions of all other sources of GHG. In assessing cumulative impacts, it must be determined if a project’s incremental effect is “cumulatively considerable.” See CEQA Guidelines sections 15064(i)(1) and 15130. To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

As part of its supporting documentation for the Draft Scoping Plan, CARB recently released an updated version of the GHG inventory for California (June 26, 2008). Shown below is a graph from that update that shows the total GHG emissions for California for 1990, 2002-2004 average, and 2020 projected if no action is taken.

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California’s GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation (see Climate Action Program at Caltrans (December 2006), Caltrans has created and is implementing the Climate Action Program at Caltrans that was published in December 2006. This document can be found at: <http://www.dot.ca.gov/docs/ClimateReport.pdf>

Figure 10 California GREENHOUSE GAS Inventory



Taken from: <http://www.arb.ca.gov/cc/inventory/data/forecast.htm>

Project Analysis

The types of activities included in the proposed project such as minor curve improvements, shoulder widening, drainage improvements, and pavement rehabilitation are not anticipated to result in any operational GHG increases; in fact, it is anticipated that the project will result in a decrease in GHG emissions when compared to the No Build because there will likely be some long term GHG benefits with the improved operation and smoother pavement surfaces. In addition, the project would remove STAA restriction which currently necessitates a 600-mile detour to access Humboldt County from the south. Some construction-related GHG emissions will be created and are unavoidable but these may be offset by the decrease in operational GHG emissions.

Construction

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.

CEQA Conclusion

The project is not anticipated to result in any operational GHG increases due to the improved operations resulting from the project. Construction activities will result in creation of minor GHG emissions, but it is anticipated that the project will result in a net benefit reducing operational GHG emissions. It is Caltrans' determination that in the absence of further regulatory or scientific information related to greenhouse gas emission and CEQA significance, it is too speculative to make a determination regarding significance of the

project's direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outline in the following sections.

AB 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as CARB works to implement the Governor's Executive Orders and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a \$238.6 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including \$100.7 billion in transportation funding through 2016.¹⁸ As shown on the figure below, the Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together yield the promised reduction in congestion. The Strategic Growth Plan relies on a complete systems approach of a variety of strategies: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.

As part of the Climate Action Program at Caltrans (December 2006, <http://www.dot.ca.gov/docs/ClimateReport.pdf>), Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting on-going research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important

¹⁸ Governor's Strategic Growth Plan, Fig. 1 (<http://gov.ca.gov/pdf/gov/CSGP.pdf>)

to note, however, that the control of the fuel economy standards is held by EPA and CARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the UC Davis.

Table 11 summarizes the Department and statewide efforts that Caltrans is implementing in order to reduce GHG emissions. For more detailed information about each strategy, please see Climate Action Program at Caltrans (December 2006); it is available at

<http://www.dot.ca.gov/docs/ClimateReport.pdf>

Adaptation Strategies

“Adaptation strategies” refer to how Caltrans and others can plan for the effects of climate change on the state’s transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

Climate change adaptation must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

Figure 11 Outcome of Strategic Growth Plan



Table 11 Climate Change Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO ₂ Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	.007	2.17

Strategy	Program	Partnership		Method/Process	Estimated CO ₂ Savings (MMT)	
		Lead	Agency		2010	2020
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.45 .0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 .36	3.6
Goods Movement	Office of Goods Movement	Cal EPA, CARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.67

The California Resources Agency (now the Natural Resources Agency, (Resources Agency)), through the interagency Climate Action Team, was directed to coordinate with local, regional, state and federal public and private entities to develop a state Climate Adaptation Strategy. The Climate Adaptation Strategy will summarize the best known science on climate change impacts to California, assess California's vulnerability to the identified impacts and then outline solutions that can be implemented within and across state agencies to promote resiliency.

Furthermore Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance and operational improvements of the system and economy of the state. The Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Prior to the release of the final Sea Level Rise Assessment Report, all state agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. However, all projects that have filed a Notice of Preparation, and/or are programmed for construction funding the next five years (through 2013), or are routine maintenance projects as of the date of Executive Order S-13-08 may, but are not required to, consider these planning guidelines. Sea level rise estimates should also be used in conjunction with information regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data. (Executive Order S-13-08 allows some exceptions to this planning requirement.) The Department issued the Notice of Preparation on May 6, 2008 for the Richardson Grove Operational Improvement project is scheduled for construction in 2010/2011 and is exempt from SLR analysis. In addition, the project area is not directly affected by coastal erosion, storm surges or storm waves. The roadway is well above the South Fork Eel River at an elevation of 500 feet.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. The Department is an active participant in the efforts being conducted as part of Governor's Schwarzenegger's Executive Order on Sea Level Rise and is mobilizing to be able to respond to the National Academy of Science report on *Sea Level Rise Assessment* which is due to be released by December 2010.

On August 3, 2009, Natural Resources Agency in cooperation and partnership with multiple state agencies released the 2009 California Climate Adaptation Strategy Discussion Draft, which summarizes the best known science on climate change impacts in seven specific sectors and provides recommendations on how to manage against those threats. The release of the draft document set in motion a 45-day public comment period.

Led by the California Natural Resources Agency, numerous other state agencies were involved in the creation of discussion draft, including Environmental Protection; Business,

Transportation, and Housing; Health and Human Services; and the Department of Agriculture. The discussion draft focuses on sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. The strategy is in direct response to Gov. Schwarzenegger's November 2008 Executive Order S-13-08 that specifically asked the Natural Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. As data continues to be developed and collected, the State's adaptation strategy will be updated to reflect current findings.

Currently, the Department is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, the Department has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, the Department will be able review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

Chapter 4. COMMENTS AND COORDINATION

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including: project development team meetings, interagency coordination meetings, presentations to community groups, and informal public meetings. This chapter summarizes the results of the Department's efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

Two public meetings in addition to the Scoping Meeting have been held during the project development phase of the project in advance of the circulation of the environmental document. Each of these meetings were advertised in local newspapers. The first occurred on September 26, 2007 and was held in Benbow, located just a few miles north of the project. This meeting utilized the "open house" style which consisted of no formal presentation, but presented various exhibits and maps which were available for review. Staff were available to answer questions and comment cards were available for attendees. Approximately 40 people attended. The primary issues raised at the meeting was the desire for an EIR to be prepared, concern about traffic queues blocking business access, concern about impacts to large redwood trees, and the desire for the trees proposed for removal to be marked in the field.

On February 20, 2008 an additional public meeting was held in Eureka. This meeting format combined both an open house style meeting as well as a panel to address questions raised by the attendees. About 125 people attended resulting in 13 comment cards being submitted. The issues raised included: impacts to designated Critical Habitat for the marbled murrelet, impacts to large redwood trees, opposing any changes to the highway segment through the Park, concern about potential impacts to tourism, and support for the proposed project.

A Scoping Meeting was held May 14, 2008 at the River Lodge in Fortuna. This meeting was advertised in the Times Standard newspaper in advance of the meeting. This meeting was also held in the “open house” style. Approximately 25 members of the public attended and 24 comment cards, 15 letters, and a petition were received. The majority of comments received at this meeting were to state support for the project. The issues raised in the letters included supporting the no-build alternative, support for reducing speed limit, concern about potential economic and growth-inducing impacts resulting from the project, potential for increasing geologic instability as a result of tree removal north of the park, as well as concern for impacts to the amenities and experience of the visitors to the State Park. The petition signed by seven individuals, opposed the project and requested that an EIS/EIR be prepared for the project.

A public hearing was held December 15, 2008 at the River Lodge in Fortuna. This meeting was advertised in the Times Standard newspaper in advance of the meeting. This meeting included a court recorder to take public testimony. Approximately 40 members of the public attended. The majority of comments received at the meeting stated concerns about the short time that the DEIR/EA had been out for circulation prior to the public hearing. Other stated concerns included potential impacts to local commercial establishments which might negatively affect the volunteer base for the local Volunteer Fire District; impacts to old growth redwoods; and impacts to northern spotted owls and marbled murrelets.

The DEIR/EA was circulated to the public on December 5, 2008 for review and comment. The comment period closed March 12, 2009. Approximately 800 comment letters and emails were received within the comment period. Approximately 200 comment letters and emails offered support for the project; the remainder identified concerns about the project and/or stated they opposed the project. Substantive comments and responses to these comments are included in Volume 2.

Several presentations about the proposed project have been provided to civic groups including: Northcoast Prosperity Network, Fortuna Rotary Club, Arcata Rotary Club, Eureka Lions Club, Citizens for Port Development and the Fortuna Chamber of Commerce. Caltrans representatives also attended a Board Meeting of the Northcoast Environmental Center on

January 24, 2008 when Richardson Grove was a topic on the agenda. Two on-site field meetings to discuss the project impacts with various environmental group representatives including EPIC, Friends of the Eel River, Northcoast Environmental Center, Piercy Watershed Association, Trees Foundation, California Department of Parks and Recreation, and Piercy Fire Protection District were held on January 28, 2008 and March 28, 2008. A pre-project meeting with agency and political representatives from state, local, and tribal governmental entities was held on June 28, 2007.

Numerous press releases and articles have been written about the project and the meetings held about the project. In addition, there have been occasional radio talk shows and news items on the local television news about the project. Information as well as the exhibits displayed at the public meetings have also been posted on the Caltrans website throughout the project development process.

Several meetings have been held with staff from US Fish and Wildlife Service, Native American groups, California Department of Fish and Game, and California Department of Parks and Recreation to discuss the project and the potential impacts. An on-site meeting was held June 30, 2008 with staff from Army Corps of Engineers, California Department of Fish and Game, and Regional Water Quality Control Board to discuss the applicable permits and the likely permit conditions that would be needed for each of the agencies.

Consultation efforts in compliance with Section 4(f) of the Department of Transportation Act included preparation of Programmatic 4(f) Evaluation and review and concurrence by staff from the North Coast Redwoods District Office of the California Department of Parks and Recreation which manages Richardson Grove State Park. Compliance with Section 106 of the National Historic Preservation Act included consulting with State Park District archaeologist, the State Park architectural historian, the State Park District landscape architect, and the Native American Heritage Commission in addition to several Native American groups listed in the cultural resources section of this document. The Historic Properties Survey Report prepared for this project was reviewed by the State Park archaeologist and staff from the Intertribal Sinkiyone Wilderness Council and approved by the California Office of Historic Preservation (OHP) regarding impacts to cultural resources.

The concurrence letter from OHP is included in Appendix F. Consultation efforts in compliance with Section 7 of the federal Endangered Species Act included review of the Biological Assessment by the US Fish and Wildlife Service (USFWS) regarding impacts to listed species. USFWS prepared a Biological Opinion dated January 15, 2009 for this project. Also consulted with Michael Van Hattem of CFG regarding impacts to the state listed marbled murrelet. Consultation in compliance with the Wild and Scenic Rivers Act is ongoing with the National Park Service.

Permits will be required for the culvert improvements from US Army Corps of Engineers, California Department of Fish and Game, and the Regional Water Quality Control Board.

Chapter 5. LIST OF PREPARERS

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Clare Golec, Environmental Planner, Revegetation Specialist. Prepared Revegetation Plan

Cindy Graham, Senior Transportation Engineer

Deborah L. Harmon, Senior Environmental Planner. Prepared the EIR/EA

Jim Hibbert, Landscape Architect. Prepared Visual Impact Assessment

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Eric Lund, Transportation Engineer

Charlie Narwold, Senior Engineering Geologist. Prepared the Foundation Report

Gail Popham, Biologist. Prepared Biological Assessment and Natural Environment Study

Darin Sullivan, Tree Maintenance Supervisor, Certified Arborist

Ben Tam, Transportation Engineer. Prepared Noise Study

Susan Tappan, Senior Transportation Engineer

Kelly Timmons, Transportation Engineer

Steve Werner, Engineering Geologist. Prepared Initial Site Assessment

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Redding, CA 96001

California Highway Patrol
P.O. Box 515
Garberville, CA 95542

California Highway Patrol
540 South Orchard Ave.
Ukiah, CA 95482

CA Resources Agency
1416 Ninth St., Ste. 1311
Sacramento, CA 95814

Dept. of Conservation
801 K Street, 24th Floor
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Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

Ray Bosch
U.S. Fish and Wildlife Service
1655 Heindon Rd.
Arcata, CA 95521

CA Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296 – 0001

U.S. Army Corps of Engineers
1455 Market St., 16th floor
San Francisco, CA 94103-1398

U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

CA Dept. of Parks and Recreation
North Coast Redwoods District
3431 Fort Ave.
Eureka, CA 95501

CA Air Resources Board
1001 I St
Sacramento, CA 95814-2814

Integrated Waste Management Board
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Assemblymember Chesbro's Representative
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CA State Lands Commission
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Sacramento, CA 95825-8202

Executive Director
Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Chapter 7. REFERENCES

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Appendix A CEQA Checklist

Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this Environmental Impact Report/Environmental Assessment. Documentation of “No Impact” determinations is provided at the beginning of Chapter 2. Discussion of all impacts, avoidance, minimization, and/or compensation measures under the appropriate topic headings in Chapter 2.

Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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I. AESTHETICS -- Would the project:

- | | | | | |
|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Have a substantial adverse effect on a scenic vista? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

- | | | | | |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Conflict with or obstruct implementation of the applicable air quality plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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d) Expose sensitive receptors to substantial pollutant concentrations?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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e) Create objectionable odors affecting a substantial number of people?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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IV. BIOLOGICAL RESOURCES -- Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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V. CULTURAL RESOURCES -- Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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d) Disturb any human remains, including those interred outside of formal cemeteries?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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VI. GEOLOGY AND SOILS -- Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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ii) Strong seismic ground shaking?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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iii) Seismic-related ground failure, including liquefaction?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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iv) Landslides?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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b) Result in substantial soil erosion or the loss of topsoil?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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VII. HAZARDS AND HAZARDOUS MATERIALS –

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

VIII. HYDROLOGY AND WATER QUALITY -- Would the project:

a) Violate any water quality standards or waste discharge requirements?

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

f) Otherwise substantially degrade water quality?

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

j) Inundation by seiche, tsunami, or mudflow?

IX. LAND USE AND PLANNING - Would the project:

a) Physically divide an established community?

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

X. MINERAL RESOURCES -- Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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XI. NOISE –

Would the project result in:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

XII. POPULATION AND HOUSING -- Would the project:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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XIII. PUBLIC SERVICES

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XIV. RECREATION –

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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XV. TRANSPORTATION/TRAFFIC -- Would the project:

a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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e) Result in inadequate emergency access?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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f) Result in inadequate parking capacity?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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XVI. UTILITIES AND SERVICE SYSTEMS –

Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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g) Comply with federal, state, and local statutes and regulations related to solid waste?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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XVII. MANDATORY FINDINGS OF SIGNIFICANCE –

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat or a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of CA history or prehistory?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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Potentially significant impact	Less than significant with mitigation Incorporation	Less than significant impact	No impact
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b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current project, and the effects of probable future projects)?

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly

Appendix B Section 4(f) Evaluation

Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvements with Public Parks, Recreation Lands, and Wildlife & Waterfowl Refuges

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327.

Introduction

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 U.S. Code, Section 303, declares that “it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.”

Section 4(f) specifies that “the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- there is no prudent and feasible alternative to using that land; and
- the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

The programmatic agreement for the Section 4(f) Evaluation and Approval for Federally-aided Highway Projects with Minor Involvements with Public Parks, Recreation Lands, and Wildlife and Waterfowl Refuges (December 23, 1986) applies to the Richardson Grove Operational Improvement project in Humboldt County on US Route 101 from PM 1.1 to 2.2 because there are no feasible and prudent alternatives to improving the existing alignment and because all possible planning to minimize harm resulting from such use has been incorporated into the project. The limits of work for the project are shown in layout sheets that are attached. This evaluation is made pursuant to Section 4(f) of the Department of Transportation Act of 1966, 49 U.S. Code 202 and Section 18(a) of the Federal-Aid Highway Act of 1968, 23 U.S. Code 138.

Description of Proposed Project

The preferred alternative includes minor road adjustments including realignments, curve corrections, and shoulder widening to accommodate STAA truck travel, thereby removing the restriction of STAA vehicles, and improving the safety and operation of US Route 101 while also improving goods movement. The project also includes culvert improvements and repaving the roadway.

List and Description of Section 4(f) Properties

The Section 4(f) resource affected by the proposed project is the Richardson Grove State Park located in southern Humboldt County about 7 miles south of Garberville. Both US Route 101 and the South Fork Eel River bisect the park. (See Figure B1) The park encompasses approximately 2000 acres and includes the following amenities: campgrounds including group and hike/bike campgrounds, Visitor Center, 9 miles of hiking trails including guided hikes and nature trails, historical points of interest, swimming, and fishing. In the summer, evening campfire programs are provided.

The most notable feature of the park is the old-growth redwood forest (large, mature redwoods often over five feet or more in diameter). Coming from the south, Richardson Grove State Park is the first stand of old-growth trees that are encountered on US Route 101, which has been nicknamed, “the Redwood Highway.” Many of the trees in the grove are

more than 1,000 years old and several trees are more than 300 feet tall. The grove includes the ninth tallest coast redwood tree in the world. There are three Memorial Groves included in the northern portion of the park, the Edward Jelenfy, Monna Jelenfy, and Walton Family groves. The Memorial Groves abut the highway and include developed areas such as the park residential units as well as natural vegetation.

A portion of a shallow archaeology site (dispersed lithic scatter) identified as P-12 001824 is present within the project area. The portion of the site to be disturbed by construction activity was determined ineligible for the National Register of Historic Places and the California Register of Historical Resources. The California Office of Historic Preservation has concurred with this determination.

US Route 101 is within the boundaries of the State Park from the southern terminus of the project to PM 2.05. US Route 101 bisects the park and the roadway right of way is contained in a transportation easement for the portion within the park. Portions of the campgrounds and trails as well as the Visitor Center are located adjacent to the roadway. Access to the park is from US Route 101. While the campground is open year round, the highest visitor use is from Memorial Day to Labor Day.

Applicability

It is appropriate to apply the Programmatic Section 4(f) Evaluation because of the following:

- The proposed improvements would be federally funded.
- The proposed project would require use of publicly owned parks, recreation lands, or wildlife and waterfowl refuges located adjacent to the existing highway.
- The proposed project is designed to improve the operational characteristics, safety, and/ or physical condition of existing highway facilities on essentially the same alignment. This includes “4R” work (resurfacing, restoration, rehabilitation, and reconstruction); safety improvements such as shoulder widening and the correction of substandard curves; and traffic operation improvements.
- The amount and location of the land to be used shall not impair the use of the remaining Section 4(f) land, in whole or in part, for its intended purpose and this

determination is concurred with by the officials having jurisdiction over the Section 4(f) lands.

- The total amount of land to be acquired from the Section 4(f) site shall not exceed the following:

<u>Size of Section 4(f) Site</u>	<u>Maximum to be acquired</u>
< 10 acres	10 percent of site
10 acres to 100 acres	1 acre
> 100 acres	1 percent of site

Richardson Grove State Park is approximately 2,000 acres. One percent of the site would be 20 acres. As described in the Environmental Impact Report/Environmental Assessment and Programmatic Section 4(f) Evaluation, the proposed project is acquiring 0.56 acres to be added into the existing highway easement.

- The proximity impacts of the project on the remaining Section 4(f) land shall not impair the use of such land for its intended purpose. This determination is concurred with by the officials having jurisdiction over the Section 4(f) lands (California Department of Parks and Recreation) and will be documented with regard to noise, air and water pollution, wildlife and habitat effects, aesthetic values, and /or other impacts deemed relevant (see Figure B3).
- The officials having jurisdiction over the Section 4(f) lands (California Department of Parks and Recreation) must agree, in writing, with the assessment of the impacts of the proposed project on, and the proposed mitigation for, the Section 4(f) lands (see Figure B3).
- For projects using land from a site purchased or improved with funds under the Land and Water Conservation Fund Act, the Federal Aid in Fish Restoration Act (Dingell-Johnson Act), the Federal Aid in Wildlife Act (Pittman-Robertson Act), or similar laws, or the lands are otherwise encumbered with a Federal interest

(e.g., former Federal surplus property), coordination with the appropriate Federal agency is required to ascertain the agency's position on the land conversion or transfer. The programmatic Section 4(f) evaluation does not apply if the agency objects to the land conversion or transfer.

- This Programmatic Evaluation does not apply to a project for which an Environmental Impact Statement (EIS) is prepared, unless the use of Section 4(f) lands is discovered after the approval of the Final EIS.
- Caltrans, as assigned by the Federal Highway Administration, has determined that the facts of the project match those set forth in the sections of this document labeled Alternatives, Findings, and Mitigation.

Impacts on Section 4(f) Property

Impacts to Richardson Grove State Park from the highway improvements are relatively minor and include permanent impacts resulting from vegetation removal, modifying the roadbed at and near old growth redwood trees, removal of an unused restroom structure, additions and deletions to the transportation easement through the park in addition to temporary impacts such as visual impacts resulting from new cuts and fills as well as increased noise, traffic delays, and other construction impacts.

Thirty trees are proposed for removal from within the park including two redwoods, ten Douglas fir, two big leaf maples, 14 tan oaks, and one alder and oak tree. The two redwoods to be removed are six and seven inches in diameter. The largest Douglas fir to be removed is 22 inches in diameter, but the majority to be removed range from 11 to 18 inches in diameter. The two big leafed maples to be removed are 17 and 22 inches in diameter. Half of the tan oaks to be removed are eight inches in diameter or smaller. The majority of trees to be removed occur at two locations in the park, the cut at PM 1.36 and the cut at the northern boundary of the park at PM 2.04. Both of these areas are located on former cuts, which is why there are no old growth redwoods present in the proposed disturbed area. US Fish and Wildlife Service determined that the project would not result in adverse modifications to any designated critical habitat or suitable nesting habitat for the marbled murrelet, nor would any northern spotted owl nesting habitat be removed or degraded. The Service further concluded

that the project would not have any long-term impact on the breeding performance of these species.

As old growth redwood trees abut the existing roadway, construction on the existing roadway would occur in and around the structural root zone of 76 old growth redwood trees within the park. Impacts to adjacent trees have been minimized by increasing road height rather than severing roots where feasible and selecting a roadbed component that is less thick to minimize excavation. Construction within the structural root zone of the old growth redwoods would be done via handwork including excavating by pneumatic excavator such as an air spade. To reduce stress on the old growth trees during construction in summer, watering will be performed. With these measures in place, both the Caltrans arborist and Dennis Yniguez, an independent arborist contracted by the Save The Redwoods League, have determined that the project would not significantly impact the root health of the old growth trees adjacent to the construction. For more information on these impacts refer to Section 2.3 in the environmental document.

There would be some visual impacts from the new cuts and fills. The two major cut areas in the park are at locations that are previous cuts. These areas would be revegetated as part of the project and the visual impact would diminish over time. The conceptual revegetation plan has been coordinated with Stephen Underwood of State Parks.

To accommodate the roadway realignments, additional property, approximately 0.56 acres, would need to be added to the existing transportation easement. This includes 3,320 sq. feet from parcel 12063-1; 2,673 sq. feet from parcel 1263-2; 4,141 sq. feet from parcel 12063-3; 5,223 sq. feet from parcel 12064-1; 7,300 sq. feet from parcel 12064-2; 580 sq. feet from parcel 12064-3; and 1,362 sq. feet from parcel 1263-4 for a total of 24,599 square feet or 0.56 acres. A portion of the Zierott Walton Family Memorial Grove is included in Parcel 1263-4. Caltrans is also transferring jurisdiction from the existing highway easement back to California Department of Parks and Recreation. The land to be transferred back to State Parks is 24,625 square feet (approximately 0.56 acres) from parcel 374-02-01. This area to be transferred back to California Department of Parks and Recreation would be within the Zierott Walton Family grove. The area to be transferred to State Parks will be enhanced with

additional vegetation before transferring back to the park. The revegetation concept has been coordinated with Stephen Underwood of State Parks.

Construction would occur in a portion of a shallow, dispersed lithic scatter identified as P-12 001824. The affected portion of the site will be disturbed by vegetation removal and placement of fill. The portion of the site outside the area to be disturbed during construction will be fenced to protect any resources existing subsurface. Vegetation removal will occur by hand and trees and brush will only be cut to ground level leaving stumps and root wads in place.

Temporary construction impacts would include increased noise to park visitors, campers, and wildlife; traffic delays; visual disturbances with construction equipment; air quality impacts from construction equipment emissions; water quality impacts with the culvert improvements; and if night work occurs, impacts from the increased lighting. Night work is less productive and therefore, more expensive. It is anticipated that night work would only be considered if the contractor got behind schedule. The maximum number of days with potential night work within the park is estimated to be twenty days. This would not be consecutive days but could occur periodically during construction. Noise impacts to the campgrounds and other visitor serving uses are discussed in Section 2.2 in the document while noise impacts to sensitive species is discussed in Section 2.3. US Fish and Wildlife Service has determined that the project may result in limited short-term harassment of marbled murrelet and northern spotted owl. Access into and through the park would remain open during construction but there would be delays experienced from one way traffic. Access into the campground areas would be marked with cones to prevent traffic queues from blocking entrances. Flaggers will be provided at the main entrance should the cones not be effective. Views could be disrupted from the equipment, but this disturbance should be localized and would occur along the roadway. Air quality effects from the emissions of construction equipment would be localized and concentrated along the existing roadway. If water is present in the drainages it would be diverted during the culvert improvements. It is anticipated that the work for the culverts would each take approximately a day to complete.

Due to the project resulting in an increase of impervious surface, storm water treatment facilities must be considered for the project. Working with California Department of Parks and Recreation, an improvement project within Richardson Grove State Park was identified that would help improve water quality by reducing the quantity of impervious surface. The improvement would include removal of a public restroom at the Visitor Center that is adjacent to a leaning redwood tree. This restroom is currently closed to the public due to the threat of the tree falling onto the restroom. By removing the restroom and the concrete foundation, nearly 900 square feet of hardened surface would be removed. Removing the foundation will require use of heavy equipment to break up the concrete. Excavation would be approximately 12 inches in depth.

Avoidance Alternatives

Acceptable avoidance alternatives under the Programmatic Section 4(f) are the following:

- No Build
- Improve the highway without using the adjacent public park, recreational land, or wildlife and waterfowl refuge
- Build an improved facility on new location without using public park, recreation land, or wildlife or waterfowl refuge

Findings

An avoidance alternative is prudent and feasible if it avoids using the Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. In assessing the importance of protecting the Section 4(f) property, it is appropriate to consider the relative value of the Section 4(f) property to the preservation purpose of the Section 4(f) statute.

An alternative is not prudent if in order to avoid Section 4(f) lands: 1) it compromises the project so that it is unreasonable given the purpose and need; 2) it results in unacceptable safety or operational problems; 3) it causes, even after reasonable mitigation is incorporated, severe social, economic, or environmental impacts or severe disruption to established

communities or severe environmental justice impacts or severe impacts to other federally protected species; 4) it results in additional construction, maintenance, or operational costs of an extraordinary magnitude; 5) it causes other unique problems or unusual factors; or 6) it involves multiple factors listed above that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

Each of these acceptable alternatives is discussed below:

No Build

The No Build Alternative has been studied. This alternative is not feasible and prudent because it would not correct existing operational deficiencies of US Route 101 and thus it compromises the project so that it is unreasonable given the purpose and need. The No Build Alternative would also continue the situation of requiring STAA vehicles to utilize a 600 mile detour into Humboldt County for vehicles coming from the south or requiring utilization of non-STAA vehicles for goods movement. The detour not only results in more in fuel and operation costs, but decreases air quality. If loads have to be transferred between STAA standard vehicles and non-STAA vehicles, transportation costs are increased and profitability decreases especially for goods that have limited shelf life such as produce or flowers.

Improvement without Using the Adjacent Section 4(f) Lands

It is not feasible and prudent to avoid Section 4(f) lands. The current alignment bisects the Section 4(f) land and design of the proposed project already incorporates design exceptions and minor alignment shifts to minimize impacts to the Section 4(f) land. The existing highway is in a transportation easement through Richardson Grove State Park ranging primarily from 60 to 65 feet in width, allowing little flexibility to implement physical improvements avoiding Section 4(f) lands.

Any avoidance alternative on the existing alignment would require removal of numerous old growth redwood trees (redwood trees 36 inches in diameter or larger) or would accomplish so little that it would compromise the project so that it is unreasonable given the stated purpose and need. The redwood trees are a unique resource and abut the roadway and, in several instances, abut the traveled way. It is these trees and their proximity to the roadway

producing a “tunnel effect” that gives this section of highway its “park like” ambiance and is the defining characteristic of the park to many. These trees are also considered primary constituent elements of the designated critical habitat for the federally and state listed marbled murrelet. These trees also provide suitable nesting habitat for the federally listed northern spotted owl.

Implementing traffic management measures such as signals or time restrictions on truck traffic access result in unacceptable safety or operational problems (Refer to “Alternatives considered but eliminated from further discussion” in Chapter 1). There is limited space to widen the roadway to accommodate the queues associated with putting in signals as the roadway is set on a steep slope above the South Fork Eel River with residences adjacent the highway north of the project and south of the project the businesses of the community of Piercy abut the highway. The curvilinear nature of the highway in association with the presence of the trees restricts sight distance so that there is little flexibility of where signals could be sited. Reducing the speed limit would not modify the deficient geometrics that result in the STAA restriction.

Alternatives on New Location

It is not feasible and prudent to avoid Section 4(f) lands by constructing on a new alignment. To avoid using any Section 4(f) land from Richardson Grove State Park would require a three mile bypass over steep terrain and result in severe environmental impacts including impacts to federally protected species. A Feasibility Study prepared in 2001 evaluated bypass alternatives (Refer to “Background” in Chapter 1). Three build alternatives were studied in this feasibility study including a 3.3 mile bypass of the park to the east, a 2.9 mile bypass that included a 4,900 foot long tunnel at the eastern park boundary, and a 3 mile long alternative across the river, but still in the park.

The alternatives bypassing the park would result in additional construction, maintenance, and operational costs of an extraordinary magnitude. The bypass alternatives ranged in cost from \$340 - \$600 million not including mitigation costs as compared to the \$5.5 million of the proposed project. The bypass alternatives would require large amounts of excavation. The easterly bypass alternative would require approximately 68 million cubic yards, and 55

million cubic yards would be excess material and need to be transported to a disposal site. The steep terrain would require large cuts up to 600 feet in height and grades for the highway would be 8 percent. The tunnel alternative would also generate substantial excess material to be disposed. Creation of the disposal site itself would likely result in environmental impacts. A new bridge over the South Fork Eel River, a federal and state designated Wild and Scenic River would be required for both the bypass alternatives. The bypass alternatives would also likely require removal of redwood trees as well as impacts to listed species. Maintenance and operational costs of the bypass alternatives would be much greater than those associated with the existing facility due to likely geotechnical issues exacerbated by the cuts and fills required by the alignments.

Measures to Minimize Harm

Numerous measures have been identified and incorporated into the project to minimize harm or mitigate for adverse impacts. These measures include design modifications, replacement of land, and enhancement of the remaining property. These measures were developed in consultation with staff of the Department of Parks and Recreation.

Design modification measures include such items as:

- Incorporation of design features (e.g., modifications to the roadway section, minor alignment shifts, design exceptions to the standard design) where necessary to reduce or minimize impacts to the Section 4(f) property including the following:
- All excavation below the finish grade within a setback equal to three times the diameter of any redwood trees shall be done with pneumatic excavator (such as an air spade) or other non-mechanized methods (shovels, pick axes) approved by the construction engineer to minimize disturbance or damage to roots with the exception of culvert excavation at PM 1.18, 1.28, 1.34, and 1.35. Mechanized equipment may be used at these locations upon approval of the construction engineer.
- With exception of the culvert excavation, the contractor will be required to use a pneumatic excavator or hand tools while excavating the soil within the structural root zone of redwood trees which will minimize physical injury to the tree roots.

- Excluding areas of proposed cut, roots less than two inches in diameter that must be cut shall be cut cleanly with sharp instrument in order to promote healing. Roots larger than 2 inches in diameter will not be cut.
- The structural section for new pavement shall use Cement Treated Permeable Base (CTPB) to minimize the thickness of the structural section, provide greater porosity, minimize compaction of roots, and minimize thermal exposure to roots from Hot Mix Asphalt paving.
- Irrigation will be provided in the structural root zone of redwoods over thirty inches in diameter in areas where excavation below the finish grade has occurred within 24 hours and once a week thereafter between the dates June 1 through September 30. This will be accomplished with the use of a water truck with a fan spray. Water equivalent to ½ inch in depth will be applied to the area defined as from the edge of pavement to 25 feet beyond the edge of pavement. The exception is that no watering is proposed at the cut slope at PM 1.35.
- In areas where new embankment is to be constructed to protect roots and promote air circulation the following measures shall be used:
 - Any duff layer shall be hand raked off the area within the clearing limits, stored, and replaced as erosion control.
 - A 0.75 foot thick layer of Class 1, Type A permeable material shall be placed and compacted as the first lift of the fill.
 - In locations where ≥ 4 inches of fill would be placed next to the trunk of a tree ≥ 18 inches in diameter, a brow log shall be used to keep the soil from the tree trunk.
 - Long term equipment and material storage sites will not be located within the park. Equipment and material for immediate use would not be stockpiled off the paved areas with the exception of the turnout at PM 1.79+/- to the west of the roadway. Equipment would only be off pavement in those areas which will be ultimately disturbed such as areas that would be under a fill and such use would require concurrence from the biological monitor.

- To avoid impacts to nesting migratory birds, vegetation removal will occur between September 30 and March 1. If this is not feasible, a qualified biologist will conduct a preconstruction bird survey to ensure that birds are not nesting in any of the vegetation to be removed. This survey would be conducted not more than 7 days prior to the vegetation removal. If birds are nesting, the nest site will be designated an Environmentally Sensitive Area and a 100-foot buffer area established and the nest left alone until nesting is complete.
- To minimize adverse noise impacts to migrating marbled murrelet during the breeding season (between March 24 and September 15) there will be no construction activity in the morning for a three-hour period starting one hour before sunrise until two hours after sunrise, then in the evening no construction activity in the three-hour period starting two hours before sunset until one hour after sunset.
- The top 4 inches of duff (redwood tree litter) shall be removed, stored at an approved location within the project limits and spread out on exposed disturbed slopes within the park boundary.
- Traffic handling to occur such that anticipated maximum delay is 15 minutes and access to the park and park maintenance yard shall be maintained. When the park entrance is within the work area or within the traffic queue, additional flaggers will be used.
- To avoid excessive disturbance to the maternity roost of California myotis bats at PM 1.49 when pups are likely to be present, if night work occurs, no light plants within 100-feet of the roost tree (PM 1.48 to 1.52 or Station 78+20 to 80+20) would be allowed.

Replacement of land includes transferring 0.56 acre of land from the current California Department of Transportation easement back to the California Department of Parks and Recreation. This replacement offsets the 0.56 acre of land that the project requires to be transferred into the transportation easement. Before transferring the land to Parks, the area will be replanted. The revegetation plan for the area to be relinquished to California Department of Parks and Recreation was developed in coordination with Stephen Underwood.

Enhancement measures include such items as:

- To offset the impacts to the old growth redwood trees where construction occurs within the structural root zone, mitigation will be provided to increase the amount of invasive plant removal. A contract with the California Conservation Corps will be established to provide approximately 300 hours a year for four years (three days each year for a crew of twelve, the minimum crew size). Crew to be directed at the discretion of the California Department of Parks and Recreation. Funding will be provided to Department of Parks and Recreation to cover 10 percent oversight at \$50 per hour.
- A two year survey by a qualified biologist(s) to document the presence of any marbled murrelet within the project limits and vicinity will be performed to provide US Fish and Wildlife Service information about inland breeding populations. The qualifications of the biologist(s) will be provided to Park staff and be approved by US Fish and Wildlife Service. The report of the findings from the survey will be provided to Parks for their review and comment prior to finalizing. Funding in the amount of \$10,000 will be provided to California Department of Parks and Recreation for oversight of this survey.
- Before activities associated with vegetation removal and road construction begin, a qualified biologist approved by US Fish and Wildlife Service will conduct a training session for all personnel discussing the general measures that are being implemented to conserve the marbled murrelet and northern spotted owl as they relate to the project.
- An arborist will be on site during ground disturbing activities to ensure compliance with the tree protection measure.
- Caltrans will provide to California Department of Parks and Recreation the equivalent funding for material and installation of 11 corvid-proof waste receptacles, 30 dumpsters, 27 recycle bins, 175 food lockers, and 79 drain grates to replace the existing equipment near parking, picnic, and camping areas in Richardson Grove State Park. Materials are estimated to cost approximately \$450,000 with an additional \$167,000 provided for installation.

- Vegetation to be used for replanting will use stock from the California Department of Parks and Recreation Shadowbrook Nursery.
- There will be a one year plant establishment period after the first year of planting that would consist of watering, weeding, and replanting if necessary. Following that would be a three year monitoring period that would include weeding. Weed removal will be a necessary component of the revegetation effort. Weed removal in the project area will utilize physical control methods (e.g., hand pulling) to remove non-native invasive species.
- All trees and shrubs removed will be put into a chipper and the chips distributed onto the finished cut-slope as mulch. Areas of disturbed soil will be further stabilized with weed-free mulch after planting if needed.
- During construction activities a biological monitor will be present to monitor on-site compliance with all minimization measures.

At archaeological site, P-12-001824:

- Portion of the site outside the work area will be marked on plans as Environmentally Sensitive Area (ESA). The ESA will be fenced; fence installation shall occur at least one week prior to any ground disturbing construction work occurring.
- Caltrans archaeologist and Native American monitor will be present to monitor all ground disturbing activities in the vicinity of the ESA. Notification of the California Department of Parks and Recreation archaeologist will be provided prior to work at P-12-001824. Caltrans archaeologist will be contacted prior to construction work to ensure their availability to monitor fence installation.
- Vegetation removal would occur by hand, cutting the trees and brush to ground level leaving the stumps and root wads in place.
- The ground surface will be raked by hand to remove the thin layer of leaves and redwood duff.
- Once vegetation and surface material are removed, filter fabric will be rolled out by hand onto the cleared area and staked to the ground.

- After the filter fabric is in place, the fill material would be placed onto it from outside the site area and it would be spread out by construction machinery and compacted.
- At no time would heavy machinery come into direct contact with the native soil and the site would remain intact at this location.
- ESA will be discussed during the preconstruction meeting with construction personnel stressing that construction activity and personnel must remain outside of ESA at all times.

Conclusion

The project with the measures to minimize harm in place would preserve the significant resources within the park. The proximity impacts of the project on the remaining Section 4(f) land shall not impair the use of such land for its intended purpose. Measures have been incorporated to minimize impacts to the old growth redwoods, archaeological site, and listed species. Certified arborists have determined that with these measures the viability of the old growth trees would not be substantially affected. The State Office of Historic Preservation has determined the project would result in ‘No Adverse Effect’ on cultural resources. The US Fish and Wildlife Service determined that project would not remove any nesting trees for listed species and would not result in direct mortality to the listed species, nor adversely modify critical habitat for the marbled murrelet. Visitor-serving uses including the campgrounds, hiking trails and Visitor Center would experience adverse impacts during construction but no substantial long term effects.

The officials having jurisdiction over Richardson Grove State Park is the California Department of Parks and Recreation. This agency has concurred that there is no feasible and prudent alternative to the proposed realignment and that the proposed project has included all possible planning to minimize long term harm to Richardson Grove State Park resources. (See Exhibit B-3)

Based on the above considerations, there is no feasible and prudent alternative to the use of land from Richardson Grove State Park property and the proposed action includes all possible planning to minimize harm to Richardson Grove State Park resulting from such use and causes the least overall harm in light of the statute’s preservation purpose.

Figure B1 Richardson Grove State Park

From Department of Parks and Recreation

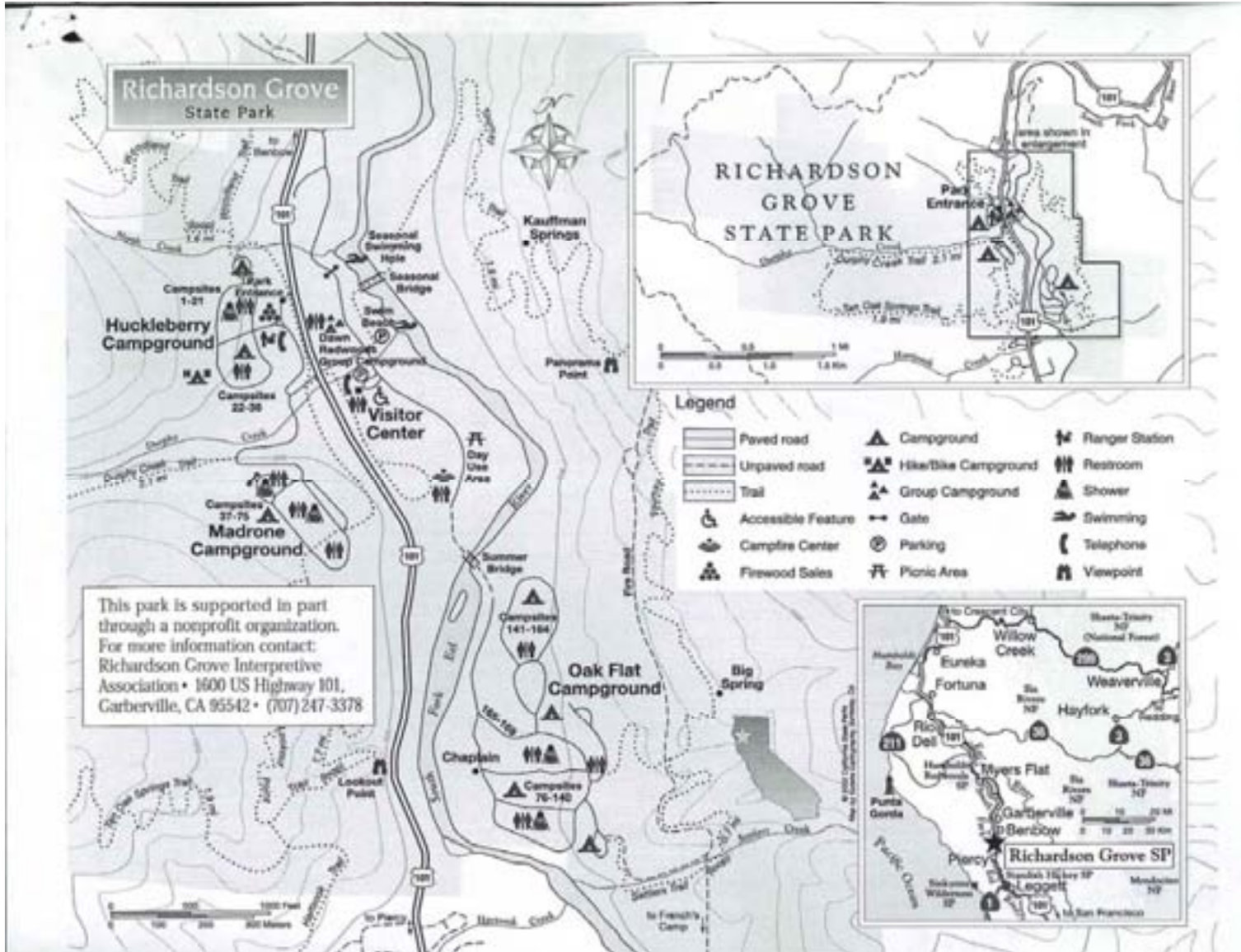


Figure B2 Land Transfer Map for Richardson Grove State Park

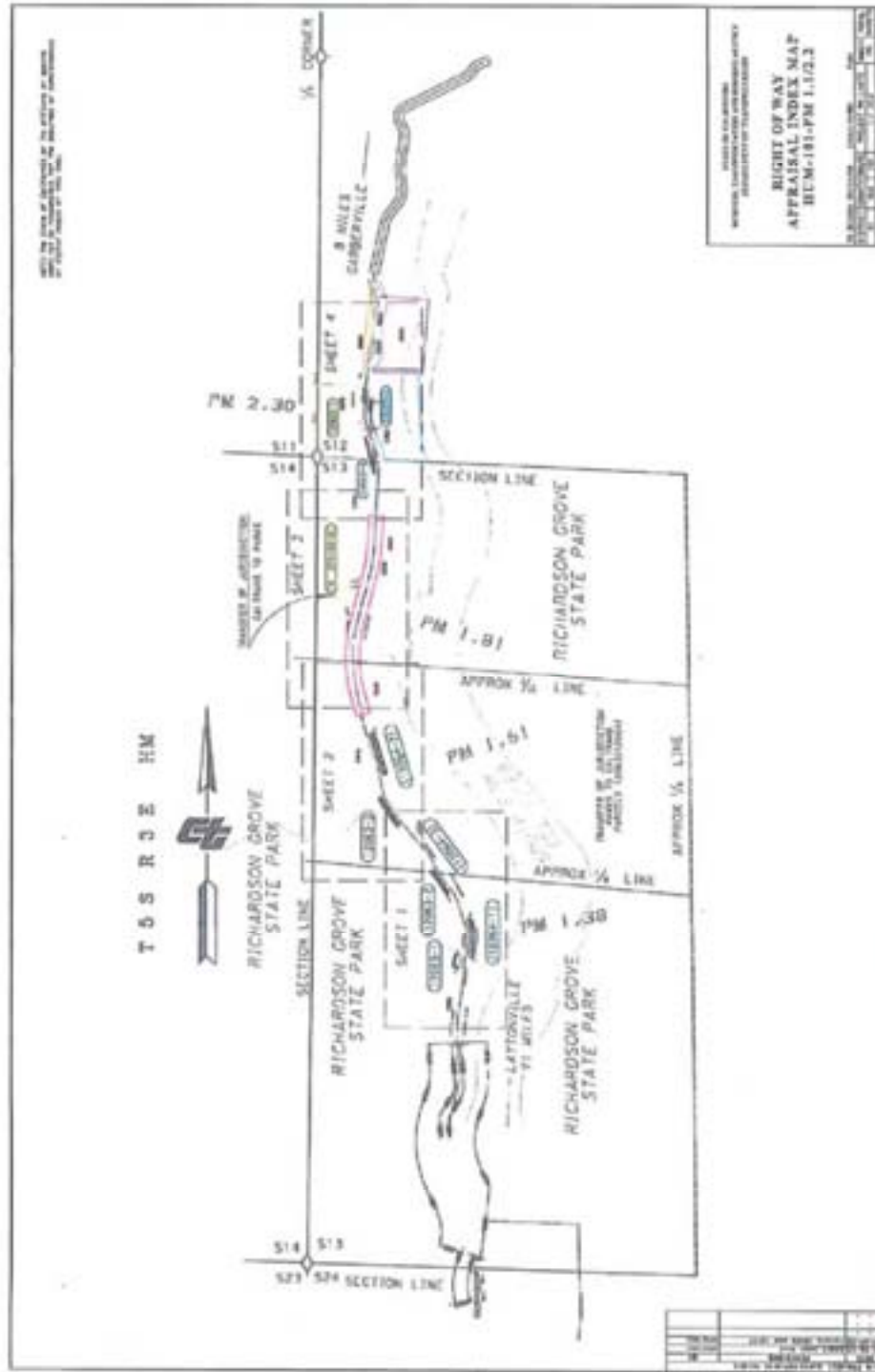


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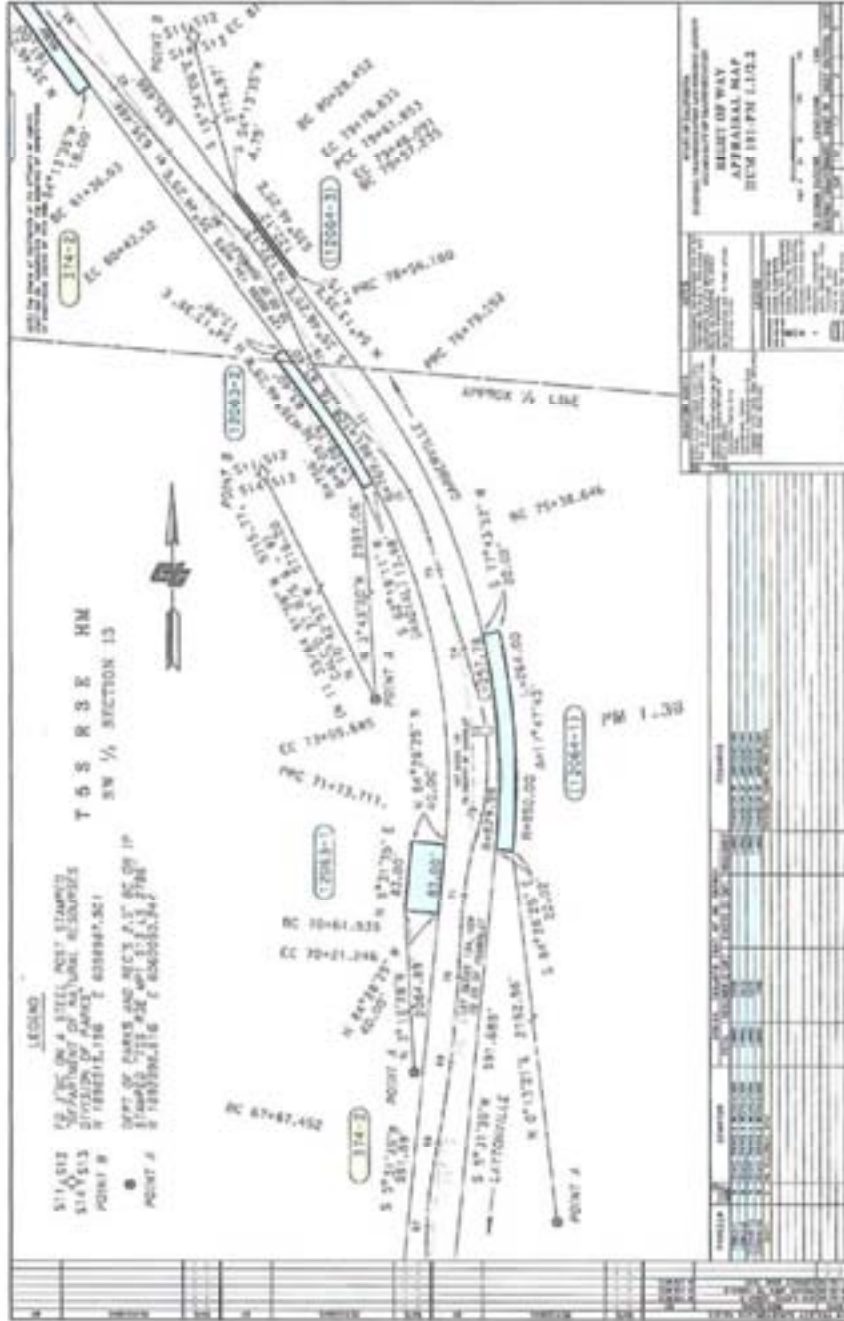


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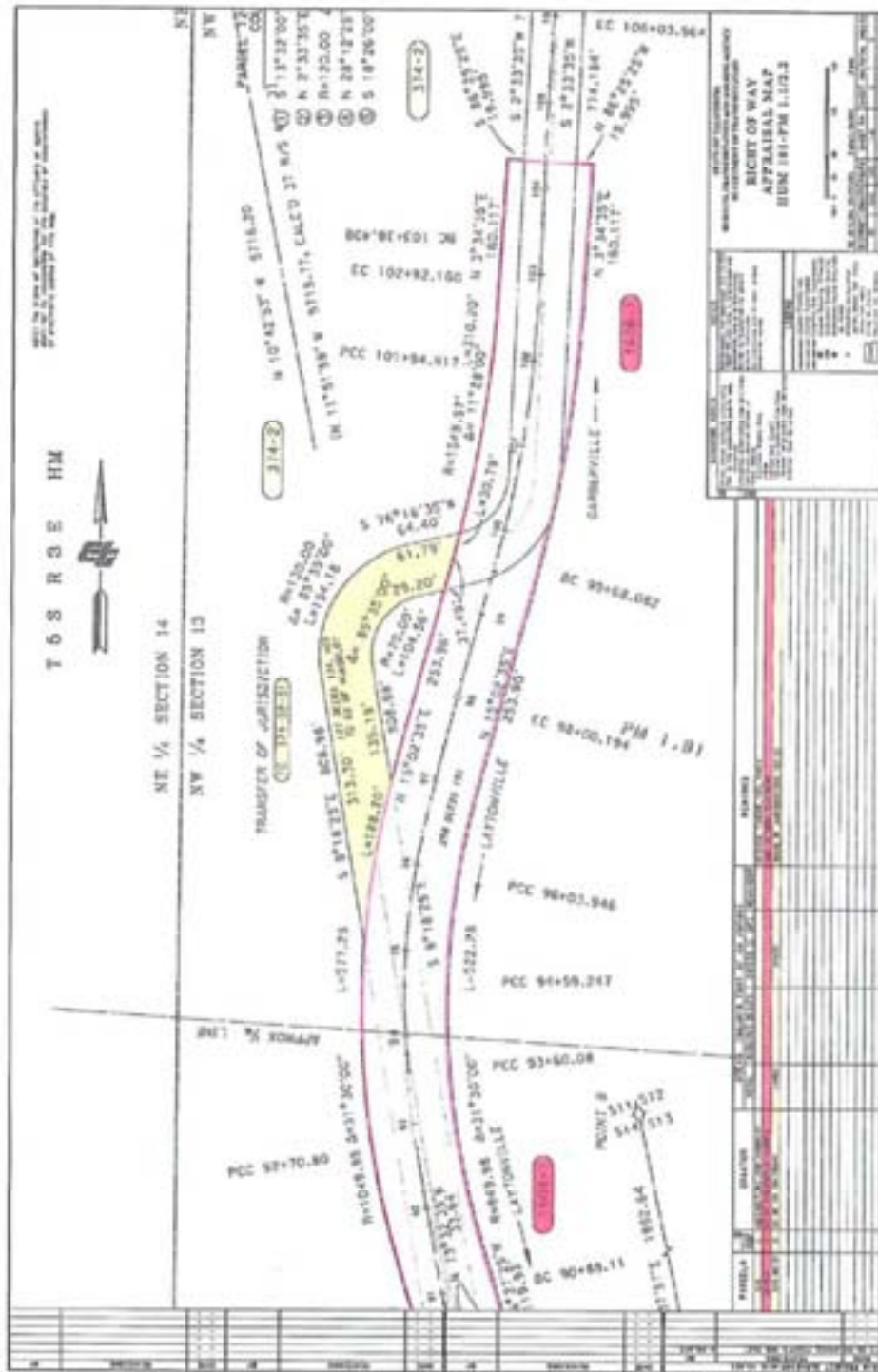


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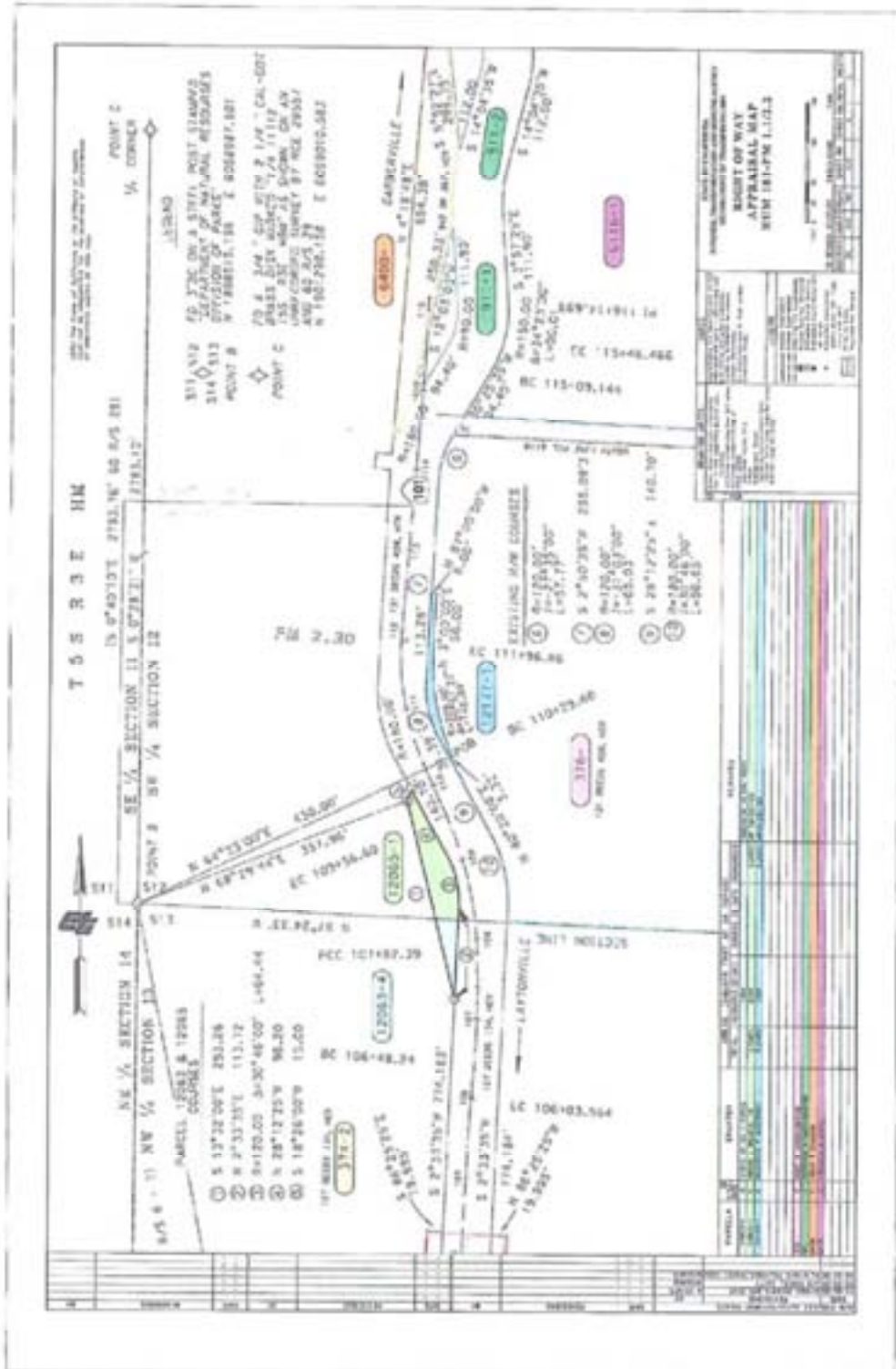


Figure B3 California Department of Parks and Recreation Concurrence Letter



State of California • The Resources Agency

Arnold Schwarzenegger, Governor

DEPARTMENT OF PARKS AND RECREATION • North Coast Redwoods District
P.O. Box 2006, Eureka, CA 95502-2006 • 707-445-6547

Ruth Coleman, Director

November 18, 2009

Deborah Harmon
North Region Environmental Services,
Department of Transportation
P.O. Box 3700
Eureka, CA 95502-3700

Dear Ms. Harmon:

Thank you for the opportunity to review the revised programmatic section 4(f) evaluation for 01-HUM-101-PM 1.1/2.2.

Based on the information provided, we accept that your department has concluded there is currently **no feasible and prudent alternative** to the **proposed realignment** through Richardson Grove State Park.

We agree that the proposed realignment action has included all possible planning by your department to minimize long term harm to Richardson Grove State Park Resources.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve Horvitz".

Steve Horvitz
District Superintendent

Appendix C Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

ARNOLD SWARTZBERGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
1120 N STREET
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TTY (916) 651-4086



*Flex your power!
Be energy efficient!*

August 25, 2009

TITLE VI POLICY STATEMENT

The California State Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.


RANDELL H. IWASAKI
Director

"Caltrans improves mobility across California"

Appendix D Minimization, Avoidance, and/or Mitigation Summary

Mitigation measures have been identified to offset the impacts to the park, redwood trees, and listed species. They include:

M-1: Restorative planting of 0.56 acre of former US Route 101 roadbed alignment. Once the planting has become established, this area will be removed from the California Department of Transportation easement and transferred back to the California Department of Parks and Recreation.

M-2: To offset the impacts to the mature redwood trees where construction occurs within the structural root zone, mitigation will be provided to increase the amount of invasive plant removal. A contract with the California Conservation Corps will be established to provide 300 hours a year for four years (three days each year for a crew of twelve, the minimum crew size). Crew to be directed at the discretion of the California Department of Parks and Recreation.

M-3: A two year survey by a qualified biologist to document the presence of any marbled murrelet within the project limits and vicinity will be performed.

M-4: Caltrans will provide California Department of Parks and Recreation 11 corvid-proof waste receptacles, 30 dumpsters, 27 recycle bins, 175 food lockers, and 79 drain grates to replace the existing equipment near parking, picnic, and camping areas in Richardson Grove State Park.

Measures to Minimize Harm within the Park

Numerous measures have been identified and incorporated into the project both in the design of the project as well as special considerations during construction to minimize harm. These measures were developed in consultation with staff of the Department of Parks and Recreation.

- All excavation below the finish grade within a setback equal to three times the diameter of any redwood trees shall be done with a pneumatic excavator (such as an air spade) or hand tools to minimize disturbance or damage to roots with the exception of culvert work at PM 1.18, 1.28, 1.34, and 1.35. Mechanized equipment may be used at these locations upon approval of the construction engineer.
- With exception of the culvert improvements, the contractor will be required to use a pneumatic excavator or hand tools while excavating the soil within the structural root zone of redwood trees which will minimize physical injury to the tree roots.
- Excluding areas of proposed cut, roots less than two inches in diameter that must be cut shall be cut cleanly with sharp instrument in order to promote healing. Roots larger than 2 inches in diameter will not be cut.
- The structural section for new pavement shall use Cement Treated Permeable Base (CTPB) to minimize the thickness of the structural section, provide greater porosity, minimize compaction of roots, and minimize thermal exposure to roots from Hot Mix Asphalt paving.
- Irrigation will be provided in the structural root zone of redwoods over thirty inches in diameter in areas where excavation below the finish grade has occurred within 24 hours and once a week thereafter between the dates June 1 through September 30. This will be accomplished with the use of a water truck with a fan spray. Water equivalent to ½ inch in depth will be applied to the area defined as from the edge of pavement to 25 feet beyond the edge of pavement. The exception is that no watering is proposed at the cut slope at PM 1.35.
- In areas where new embankment is to be constructed to protect roots and promote air circulation the following measures shall be used:
 - Any duff layer shall be raked off the area within the clearing limits, stored, and replaced as erosion control. Hand raking of the duff will be required within the structural root zone of redwoods thirty inches in diameter or greater within the park.
 - A 0.75 foot thick layer of Class 1, Type A permeable material shall be placed and compacted as the first lift of the fill.

- In locations where ≥ 4 inches of fill would be placed next to the trunk of a tree ≥ 18 inches in diameter, a brow log shall be used to keep the soil from the tree trunk.
- Long term equipment and material storage sites will not be located within the park. Equipment and material for immediate use would not be stockpiled off the paved areas with the exception of the turnout at PM 1.79+/- to the west of the roadway. Equipment would only be off pavement in those areas which will be ultimately disturbed such as areas that would be under a fill and such use would require concurrence from the biological monitor.
- The top 4 inches of duff (redwood tree litter) shall be removed, stored at an approved location within the project limits and spread out on exposed disturbed slopes within the park boundary.
- Vegetation to be used for replanting will use stock from the California Department of Parks and Recreation Shadowbrook Nursery.
- Traffic handling to occur such that anticipated maximum delay is 15 minutes and access to the park and park maintenance yard shall be maintained. When the park entrance is within the work area or within the traffic queue, additional flaggers will be used.
- To avoid excessive disturbance to the maternity roost of California myotis bats at PM 1.49 when pups are likely to be present, if night work occurs, no light plants within 100-feet of the roost tree (PM 1.48 to 1.52 or Station 78+20 to 80+20) would be allowed.
- An arborist will be on site during ground disturbing activities to ensure compliance with the specifications to minimize impacts to park resources.
- At archaeological site, P-12-001824:
 - Site will be marked on plans as Environmentally Sensitive Area (ESA).
 - Caltrans archaeologist and Native American monitor will be present to monitor all ground disturbing activities in the vicinity of the ESA. Notification of the California Department of Parks and Recreation archaeologist will be provided prior to work at P-12-001824.

- ESA will be fenced; fence installation shall occur at least one week prior to any ground disturbing construction work.
- ESA will be discussed during the preconstruction meeting with construction personnel stressing that construction activity and personnel must remain outside of ESA at all times.
- Caltrans archaeologist will be contacted prior to construction work to ensure their availability to monitor fence installation.

Additional Measures to Minimize Harm throughout Project Limits

- Before activities associated with vegetation removal and road construction begin, a qualified biologist approved by US Fish and Wildlife Service will conduct a training session for all personnel discussing the general measures that are being implemented to conserve the marbled murrelet and northern spotted owl as they relate to the project.
- To avoid impacts to nesting migratory birds, vegetation removal will occur between September 30 and March 1. If this is not feasible, a qualified biologist will conduct a preconstruction bird survey to ensure that birds are not nesting in any of the vegetation to be removed. This survey would be conducted not more than 7 days prior to the vegetation removal. If birds are nesting, the nest site will be designated an Environmentally Sensitive Area and a 100-foot buffer area established and the nest left alone until nesting is complete.
- To minimize adverse noise impacts to migrating marbled murrelet during the breeding season (between March 24 and September 15) there will be no construction activity in the morning for a three-hour period starting one hour before sunrise until two hours after sunrise, then in the evening no construction activity in the three-hour period starting two hours before sunset until one hour after sunset.
- There will be a one year plant establishment period after the first year of planting that would consist of watering, weeding, and replanting if necessary. Following that would be a three year monitoring period that would include weeding. Weed removal will be a necessary component of the revegetation effort. Weed removal in the project area will utilize physical control methods (e.g., hand pulling) to remove non-native invasive species. All trees and

shrubs removed will be put into a chipper and the chips distributed onto the finished cut-slope as mulch. Areas of disturbed soil will be further stabilized with weed-free mulch after planting if needed.

- During construction activities a biological monitor will be present to monitor on-site compliance with all minimization measures.
- Traffic handling to occur such that anticipated maximum delay is 15 minutes and access to businesses, residences, and the park shall be maintained.
- In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the revegetation and erosion control included in the project will not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

Appendix E US Fish and Wildlife Service List

Listed/Proposed Threatened and Endangered Species for Humboldt County (Candidates Included)

March 24, 2008

Document number: 1003525944-103047

KEY:

(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
 (PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
 (E) Endangered Listed in the Federal Register as being in danger of extinction
 (T) Threatened Listed as likely to become endangered within the foreseeable future
 (C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
 * Denotes a species Listed by the National Marine Fisheries Service

Type	Scientific Name	Common Name	Category	Critical Habitat
Plants				
	<i>Erysimum menziesii</i>	Menzies' wallflower	E	N
	<i>Lilium occidentale</i>	western lily	E	N
	<i>Thlaspi californicum</i>	Kneeland Prairie penny-cress	E	Y
Invertebrates				
*	<i>Haliotis cracherodii</i>	black abalone	PE	N
Fish				
	<i>Eucyclogobius newberryi</i>	tidewater goby	E	Y
*	<i>Oncorhynchus kisutch</i>	S. OR/N. CA Coho salmon	T	Y
*	<i>Oncorhynchus mykiss</i>	Northern California steelhead	T	Y
*	<i>Oncorhynchus tshawytscha</i>	CA coastal Chinook salmon	T	Y
Reptiles				
*	<i>Caretta caretta</i>	loggerhead turtle	T	N
*	<i>Chelonia mydas (incl. agassizi)</i>	green turtle	T	N
*	<i>Dermochelys coriacea</i>	leatherback turtle	E	Y
*	<i>Lepidochelys olivacea</i>	olive (=Pacific) ridley sea turtle	T	N
Birds				
	<i>Brachyramphus marmoratus</i>	marbled murrelet	T	Y
	<i>Charadrius alexandrinus nivosus</i>	western snowy plover	T	P
	<i>Coccyzus americanus</i>	Western yellow-billed cuckoo	C	N
	<i>Pelecanus occidentalis</i>	brown pelican	E	N
	<i>Phoebastris albatrus</i>	short-tailed albatross	E	N
	<i>Strix occidentalis caurina</i>	northern spotted owl	T	Y
Mammals				
*	<i>Balaenoptera borealis</i>	sei whale	E	N
*	<i>Balaenoptera musculus</i>	blue whale	E	N
*	<i>Balaenoptera physalus</i>	fin whale	E	N
*	<i>Eumetopias jubatus</i>	Steller (=northern) sea-lion	T	Y
	<i>Martes pennanti pacifica</i>	Pacific fisher	C	N
*	<i>Megaptera novaengliae</i>	humpback whale	E	N
*	<i>Physeter macrocephalus</i>	sperm whale	E	N

Appendix F Office of Historic Preservation Concurrence Letter

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-6624
calhpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov



April 1, 2008

Ms. Deborah Harmon
Department of Transportation
North Region Environmental Services-North
P.O. Box 3700
Eureka, CA 95502-3700

RE: Proposed Richardson Grove STAA Project, Humboldt County, California; FHWA080303B

Dear Ms. Harmon:

Thank you for requesting my comments on the above cited finding. You are initiating this consultation following provisions of the January 2004 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation and Memorandum of Understanding between the Federal Highway Administration, California Division and the California Department of Transportation State Assumption of Responsibility for Categorical Exclusions*. My staff has reviewed the documentation you provided and I would like to offer the following comments.

You have requested my concurrence regarding the National Register of Historic Places eligibility evaluation made pursuant to Stipulation VIII.C.5 of the Programmatic Agreement. You have concluded that the portion of the archaeological site P-12-001824 that lies within the undertakings Area of Direct Impact (ADI) is not eligible for the National Register. Your conclusion is based on the fact that this portion of the site contains little depth, no features, and a general lack of artifactual content. In addition based on information currently presented, the site within the ADI is not eligible under any other National Register criterion. I concur with your determination that the portion of site P-12-001824 which is located within the undertakings ADI is not eligible for the National Register. If the Tribes provide additional information why they believe the site is a traditional cultural property, I am willing to reconsider my concurrence in your determination. However based on the information presented, I do not object to a finding of no adverse effect with Standard Conditions.

If my staff can be of any further assistance, please contact Dwight Dutschke or Susan Stratton at 916-653-6624.

Sincerely,

A handwritten signature in cursive script that reads "Susan K. Stratton for".

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Appendix G Wild and Scenic River Concurrence



United States Department of the Interior
NATIONAL PARK SERVICE
Pacific West Region
1111 Jackson Street
Oakland, CA 94607

April 15, 2010

Deborah Harmon
1056 Union Street
Eureka, CA 95501

Subject: Richardson Grove Operational Improvement Project

Dear Ms Harmon:

This letter is in response to the Garberville Richardson Grove Operational Improvement Project. This project is within one mile of the federally designated Eel Wild and Scenic River. Section 7 of the Wild and Scenic Rivers Act prohibits federal agencies from "assist[ing] by loan grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established." The National Park Service considers water resources projects to include projects involving construction in the bed or on the banks of the river.

The proposed improvements, as outlined in the documents provided, will not have a direct and adverse effect on the values for which the river was designated. However, if at any point the project scope should change you are required to notify the National Park Service.

If you have any further questions, please contact me at (510) 617-1451.

Sincerely,

A handwritten signature in blue ink that reads "Stephen Bowes".

Stephen Bowes
CA Wild and Scenic Rivers Coordinator
National Park Service
1111 Jackson Street, suite 700
Oakland, CA 94607

Appendix H Floodplain Evaluation

Floodplain Evaluation Report Summary (1)

Dist 01 Co. HUM Rte. 101 P.M. 1.2/2.2

Project No. 01-464800 Bridge No. N/A

Limits: PM 1.2/2.2

This project, located in Richardson Grove State Park, proposes to modify the non-standard roadway to accommodate STAA standard trucks. The improvements will also help other vehicles pass safely through the grove. Proposed work includes minor realignment at the south end of the project limits, an AC overlay in the mid section, and widening for two 12 ft lanes and 4 ft shoulders at the north end. Widening along the north will make use of a retaining wall.

Floodplain Description:

Highway 101 runs approximately parallel to the South Fork Eel River throughout the project limits. The watershed in this area is hilly and heavily wooded. State and National Parks are not mapped by FEMA. Richardson Grove State Park is shown on FEMA panel # 0600601850 B as Zone D, "Areas of undetermined but possible, flood hazards. Most of the project lies within Zone D, with a short segment on the north end lying in Zone C, "Areas of minimal flooding". No Base Floodplain or Base Floodplain Elevations have been established in this area.

- | | Yes | No |
|---|-------------------------------------|-------------------------------------|
| 1. Is the proposed action a longitudinal encroachment of the base floodplain? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Are the risks associated with the implementation of the proposed action significant as defined in 23 CFR, Section 650.105 (o)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q:1,2)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Are Floodplain Studies that document the above answers on file? If no, explain. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Daum Freund
 Signature – Hydraulic Engineer, District 01



4/30/08
 Date

- | | | |
|---|--------------------------|-------------------------------------|
| 1. Will the proposed action support probable incompatible floodplain development? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Are there any significant impacts on natural and beneficial floodplain values? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q:3)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Are Location Hydraulics Studies that document the above answers on file? If no, explain <u>See Attached Sheet</u> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Deborah L. Norman
 Signature - Environmental Branch Chief

10/1/2008
 Date

Concurrence: Eric Sund
 Signature – Project Engineer

10/1/2008
 Date

The project as planned will have no significant impact per 23 CFR, Section 650.105(q:3), therefore no Location Hydraulics Study is required.

Appendix I Natural Environment Study

The Natural Environment Study for this project is at the end of this document.

Appendix J Revegetation Plan

Golet3-10-10

**Richardson Grove Widening and Resurfacing Project
Revegetation Plan
01-HUM-101-PM 1.1/2.2
EA 01-46480**

Introduction

The following revegetation activities are proposed for the California Department of Transportation (Caltrans) Richardson Grove Widening and Resurfacing project between Post Mile 1.1 and 2.2 along State Route 101 in Humboldt County.

Revegetation activities will be conducted in project areas with vegetation removal and soil disturbance, and planting will be focused in four locations in the project area (see Figure 1 below). Permanent erosion control mulching and natural vegetation recruitment will be utilized in smaller and/or narrower impact areas where buffers for maintenance and roadside safety are required, however, weeding will be conducted in these areas to ensure native vegetation establishment. The four proposed planting areas total approximately 32,480 square feet or 0.75 acres.

The vegetation type impacted in the planting areas is Redwood Forest (vegetation type based on California Natural Diversity Database *List of California Terrestrial Natural Communities* dated September 2003). The revegetation goal is to establish self-sustaining native vegetation cover in all strata similar to pre-project conditions in the project area. The revegetation activities will consist of application local native mulch for permanent erosion control on all disturbed soils, planting and maintenance of locally appropriate containerized native plants in the four planting areas, and weeding of invasive plants throughout the project area. During project clearing activities, unusable logs and native woody debris will also be chipped and saved for revegetation mulching purposes.

Planting

The four planting areas are within Redwood Forest, hence the planting palette will utilize upland species associated within this vegetation type. A site visit was also conducted June 18, 2008, with Caltrans Landscape Architecture staff and California State Parks staff to determine micro-site habitat influences, appropriate planting palettes, potential for plant salvaging, and planting and maintenance logistics. The planting palette listed below in Table 1 is based on the planting areas vegetation type and the site visit. The State Parks Shadowbrook Nursery in Whitethorn, California will outgrow the plant material through an Interagency Agreement between Caltrans and State Parks. Planting shall be contracted out through an Interagency Agreement between Caltrans and the Humboldt Service Center of the California Conservation Corps (CCC).

Table 1: Richardson Grove Planting Palette

Scientific name	Common name	Quantity
<i>Cornus nuttallii</i>	Pacific dogwood	30
<i>Corylus cornuta</i> var. <i>californica</i>	California hazelnut	32
<i>Polystichum munitum</i>	sword fern	60
<i>Rosa gymnocarpa</i>	woodland rose	30
<i>Sequoia sempervirens</i>	coast redwood	56
<i>Vaccinium ovatum</i>	evergreen huckleberry	27

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Planting will occur in the fall of 2012 or first fall after project completion, and after seasonal rains have moistened soils beyond the first several inches. The planting of trees will be conducted outside the “clear recovery” zone, which is a required tree-planting setback of 20 feet from traveled road surface for safety and maintenance. Plants will be staggered or group planted in soil building compost amended holes slightly deeper than container and twice as wide, encircling dirt berms will be installed around the plant (watering basins), three to four inches of clean and coarse mulch will be applied on top of the planted hole, and plants will be deep watered with approximately 3 to 4 gallons immediately after planting. Subsequent watering of plants may occur one month after initial planting if rainfall doesn't exceed 0.5 inches in a week.

Maintenance

Plant watering will be conducted for two years after planting during the dry season, which will consist of 18 visits every week (May through September). Should replanting be required, these plants will be watered for two years after planting. No more than a two-year watering plan is proposed since long-term watering is not recommended for native plants that need to acclimate to natural site conditions. Plants will be watered with 4 to 5 gallons of water and in a manner that will allow water penetration into planting hole and dissipation of water energy to avoid soil exposure and erosion. Watering will be performed by the CCC via a water truck and the use of hoses, watering wands, buckets, and/or watering cans. Water will be obtained from a commercial water source.

Weed removal in the project area will be a component of the revegetation activities due to ground disturbing project activities and presence of invasive plants in the project vicinity. Weeding will primarily be performed in the spring when the soils are moist and prior to weeds setting seed, and will be conducted for five years after project completion. Weed removal in the project area will utilize physical control methods (e.g. hand pulling), and will target invasive species such as French broom (*Genista monspessulana*), fennel (*Foeniculum vulgare*), and perennial sweetpea (*Lathyrus latifolius*).

Plant watering and invasive plant weeding shall be contracted out through an Interagency Agreement between Caltrans and the Humboldt Service Center of the CCC, and will be conducted under the supervision of Caltrans Landscape Architect or Revegetation Specialist staff.

Monitoring

Revegetation monitoring will be conducted for three years for plant survival following the initial planting or any replanting, and five years for weeding by Caltrans Environmental or Landscape Architecture staff. The monitoring goal is to ensure that the revegetation goal is met and provide a mechanism for corrective action if the goal is not being met.

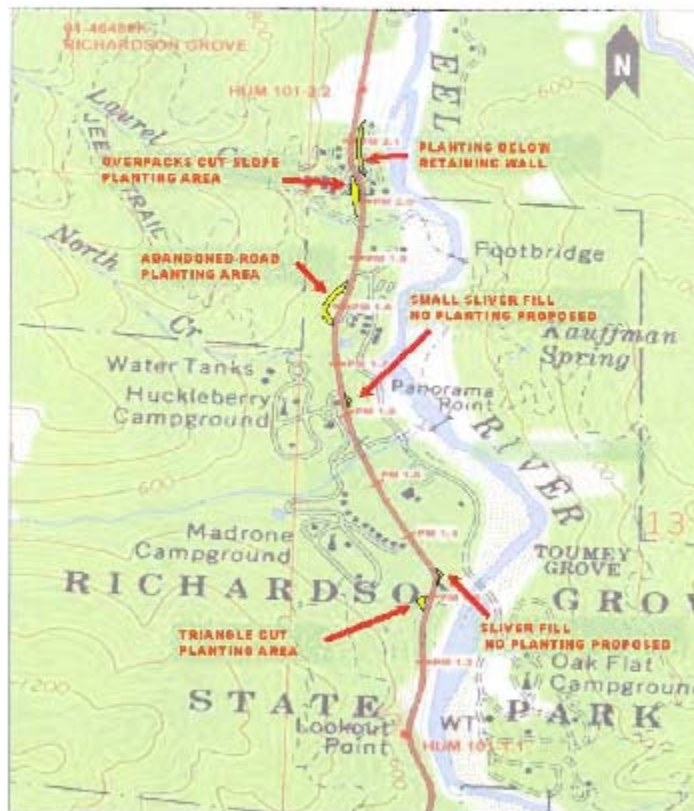
The monitoring objectives are to achieve a greater than 80 percent survival of planted material with no unvegetated voids greater than 10 by 10 feet, and less than 1 percent relative coverage of invasive weeds. The monitoring methods will be a quantitative census monitoring for plant survival, qualitative cover estimate of invasive weeds utilizing cover percent visual charts, and establishment of permanent landscape photopoints of all disturbed project areas. Planted material survival will be monitored for mortality or poor vigor (less than 30% green material). Dead or poor vigor plants will be replaced in the fall if natural recruitment of native plants has not filled the planting area void, and will be identified in the field for a full maintenance schedule. A different native plant from Table 1 but

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associated with the Redwood Forest may be substituted in replacement planting if a species demonstrates an overall failure to thrive.

Any additional remedial or adaptive management measures undertaken to achieve the revegetation goal will be done under consultation with a qualified Caltrans Biologist, as well as, the pertinent reviewing agencies. The revegetation monitoring results and photos will be summarized in a final report at the end of the three-year planting and five-year weeding monitoring periods, and distributed for review and approval to pertinent reviewing agencies.

Figure 1: Richardson Grove Planting Locations



Appendix K Visual Impact Assessment

To: Deborah Harmon
North Region Environmental Management

Date: 16 May 2008

File: 01-HUM-101
PM: 1.1/2.2
EA: 01-464800
Richardson Grove STAA

From: **Department of Transportation**
North Region - Landscape Architecture , Eureka

The following report has been prepared for the proposed STAA curve correction project on State US Route 101 in Richardson Grove State Park in Humboldt County, California.

Project Description

US Route 101 is the primary north-south route serving coastal California and is critical to the commerce of northwestern California. The existing US Route 101 through Richardson Grove is a narrow two-lane road with large old growth redwood trees encroaching into the shoulders. Industry standard sized trucks conforming to the Surface Transportation Assistance Act (STAA) are currently prohibited from traveling US Route 101 north of Leggett due to existing concerns at Confusion Hill and Richardson Grove. These restrictions are in place primarily because of concerns with the ‘off-tracking’ of these longer trucks when they travel around curves. The restrictions at Confusion Hill would be lifted with the completion of the Confusion Hill bypass in 2009. This would leave Richardson Grove as the only remaining location on US Route 101 restricting access of STAA trucks traveling into Humboldt County from the south.

This project would adjust the roadway alignment to accommodate STAA truck travel through Richardson Grove. These improvements would eliminate the STAA restrictions at three curves and also help other vehicles safely travel through Richardson Grove. Improvement of goods movement would help local businesses stay competitive in the marketplace.

The project has been broken into three sections. Alterations to the existing landscape would only occur in sections 1 and 3. Improvements in the middle portion, section 2, would consist only of resurfacing the existing pavement. The primary modifications to the existing landscape include a small triangular shaped cut slope and a sliver fill slope near the south end of the grove and a two larger cut slopes towards the north end of the project limits outside the Park near Overpacks driveway and the Singing Trees Recovery Center. A soldier pile tieback wall is proposed at the location of the larger cut slope towards the north end of the project limits. The project scope includes the provision of 12’ lanes and 2’ shoulders where possible however large roadside redwoods located along the existing roadside would be preserved. In other locations, minor fill activity to allow for shoulder widening may be required. Old pavement not needed would be obliterated and removed from site.

Project Setting

The project area is located in the northern Coast Range approximately 1 mile north of the Humboldt/Mendocino county line. The highway is located on the top of a bluff overlooking the Eel River to the northeast and at the base of a mountain ridge to the southwest. The project site which is roughly 1.1 miles in length crosses through two ecotypes: old growth redwood forest and conifer/oak woodlands. The southern half the project is located in Richardson Grove State Park which includes approximately 2,000 acres of old growth redwood forest managed by the California Department of Parks and Recreation. Richardson Grove is the first stand of old growth redwoods that travelers on US Route 101 pass through while on their northbound trek from San Francisco to Eureka and the Oregon Coast. In this location, US Route 101 tightly winds through an old growth redwood forest where in many locations, large redwood trees with a DBH of over 20 feet are located immediately adjacent to the edge of pavement. Other tree species such as Douglas-fir, big leaf maple, madrone, alder and tanoak grow along the highway edge and where small forest canopy openings provide partial sunlight that illuminates the dark dense forest floor. The northern half of the project is located outside of the park boundary in more of a commercial setting. Vegetation coverage in this area has been affected by development activities that have occurred since the highway was constructed. The dense old growth redwood forest has been thinned out and more sun tolerant trees have established where human and natural soil disturbance activities are minimal. Although redwoods, Douglas-fir, grand fir and big leaf maple are still the dominant species in this area, tanoaks and other sun and heat tolerant species have establish on the more exposed and disturbed soils such as the two locations where slope excavation activities are proposed.

The climate in the area is affected by a combination of the cool coastal zone and the warm Mediterranean climate common throughout most of inland California. Winters are often cool and rainy and the summers are warm and dry. The average high/low temperatures range from 87/52F during the summer and 49/37F in winter. The area receives an average of 69.5 inches of rainfall annually most of which occurs during the winter rainy season.

Scenic Resources

This section of US Route 101 passes through Richardson Grove State Park. Richardson Grove along with several other reserves common along US Route 101 protects some of the remaining stands of old growth redwood trees in the North Coast region. The most dominant scenic resource within the project limits are the old growth redwood forest. Massive old growth trees located immediately adjacent to the highway draw the full visual attention of all visitors who travel through this section of US Route 101.

Between the town of Leggett and the Oregon border, US Route 101 has been identified as ‘Eligible’ for scenic highway status on the California Scenic Highway System. The project area is located along a section of the South Fork Eel River, which has been designated as a Wild and Scenic River at the State and Federal Level. This portion of US Route 101 is part of the Pacific Coast Bike Route.

Visual Impacts

Of the overall one mile length of the project limits, changes to the existing alignment are proposed for slightly more than half and would occur between PM 1.14/1.70 and PM 2.02/2.20. In these locations, cut and fill activities would be visible to the traveling public. A retaining wall is being proposed at the far northern cut slope outside of the park boundaries in order to minimize the amount of vegetation required for removal. A majority of the project scope entails subtle realignment of highway to improve curve radii. The alignment shift from the existing center line would be approximately 2 to 6 feet on average. Small saplings, brush and forbs, grasses, sorrels and ferns would be removed prior to realignment of the highway. Existing roadbed no longer required for the new alignment would obliterated, graded to a natural contour and covered with forest litter collected prior to construction.

The analysis of the visual impacts for the entire project is broken down into segments based on what is proposed. Thus a section of the highway where minor realignment requiring minimal impacts to existing

vegetation is included in one segment and adjacent activities requiring noticeable cut or fill activities is discussed in a separate segment. Each segment is further broken down and analyzed into the left and right side of the highway when driving northbound on US Route 101. The sub-segments are further broken down where park trails, park facilities or commercial structures are located within the viewshed of the highway. In many instances, cut or fill slopes occur on one side of the highway while no or minimal activities occur on the opposite side of the highway. After impacts to the existing visual environment are identified, recommendations to minimize visual impacts are identified.

Each segment is identified by the beginning and ending Stations that mark the northern and southern boundaries where similar work would occur. Stationing is an engineering method for measuring distance in lieu of mile markers. Normally a project starts at Station 0+0 and increases in number as the distance from the starting point increases. The Station number to the left of the '+' symbol represents 100 feet in length and the number to the right of the '+' symbol is broken down to the nearest foot. Hence Station 1+20 would be 120 feet away from the Station 0+0.

Park Boundary

Stations between 60+0 to 65+55 (Post Mile 1.13 to 1.24) and 108+25 to 116+00 (Post Mile 2.05 to 2.19) are located outside of the Richardson Grove State Park boundary.

Stations between 65+55 (PM 1.24) and 108+25 (PM 2.05) are located within the Richardson Grove State Park boundary.

Station 60+0 to Station 63+40 (PM 1.13 to 1.2)

Only new overlay (asphalt paving) is proposed for this section of highway. No other activities such as widening, shoulders or new cut/fill slopes are proposed at this location. No existing vegetation would be impacted. There would be no impacts to the existing visual setting in this area.

Station 63+40 to Station 70+70 (PM 1.2 to 1.33)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be slightly widened to provide for 2 foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement. Existing vegetation located where cut and fill slopes are proposed would be removed prior to grading. Impacts to the existing visual setting in this area would be low due to the removal of roadside vegetation however, these impacts would be diminish as forest regeneration naturally occurs.

West –

Minor cut slope activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

East –

Minor fill slope activities would be required in this section of highway. Although no major trees would be removed, some existing grasses, shrubs and seedlings may be impacted.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations identified for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control requirements. The top 4 inches of duff (redwood tree litter) should be removed, stored at an approved location within the project limits and spread out on exposed slopes located within the Park boundaries after cut and fill grading activities are completed and the slopes are ready to receive permanent erosion control treatment. No hydro-seeding should occur in this area.

Station 70+70 to Station 71+50 (PM 1.33 to 1.35)

New overlay (asphalt paving) is proposed for this section of highway. The existing alignment will be shifted towards the west to accommodate STAA vehicles. The highway surface would be slightly widened to provide for 2 foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement. Existing vegetation located where cut and fill slopes are proposed would be removed prior to grading. The most noticeable change to the roadside would be a roadside cut on the west side that slightly increases an existing cut slope excavated when the highway was initially constructed. The dominant visual resource in this area is the dense stand of massive old growth redwoods that create the visual setting just beyond the proposed cut area. Shifting the highway 10 feet to the west would allow for an adequate curve correction while avoiding a cluster of large old growth redwoods located adjacent to the shoulder east of the highway at approximately Station 71+65.

Due to the density of trees in the immediate area, combined with the scale of the large old growth redwoods, visual impacts created by the removal of the triangular cluster of trees would be low to moderate. When driving through this section of roadway, the visual attention by most people would be drawn to the old growth redwoods located in the immediate area therefore the loss of trees in the triangular cut slope would be slightly noticeable. Covering the slope with forest duff and planting seedlings would further reduce the visual impact.

West –

A triangular cut is proposed on an existing cut slope. The existing cut slope has a steepness of approximately 1.5:1. The surface of the proposed cut slope would rise 40 feet uphill at its highest point from the roadway and would be 80 feet in length. The total area of the cut slope would be approximately 1650 ft². Existing vegetation cover including the proposed cut slope and the area extending several hundred feet up the hillside consists of densely spaced second growth forest that was cut in the past and regenerated over time. Most of the larger trees average 1 foot in diameter although there are two larger trees including a 22 inch DBH Douglas-fir on the proposed cut slope. Approximately thirteen trees and existing understory vegetation would be removed, the largest of which includes four Douglas-fir that range from 11 to 15 inches in DBH and three big leaf maple trees that are 17 to 22 inches in DBH. All vegetation located above the proposed triangular cut slope would remain.

The stand of second growth that includes the proposed cut slope and the slopes located above the cut allow some sunlight to illuminate the highway during the day, however much of this area is shaded by the dense canopy of adjacent old growth redwoods. Removal of the 13 trees would slightly increase the amount of sunlight that illuminates the highway from the southwest, however, remaining trees located above the cut slope would continue to provide partial shade. Most likely, the increase in natural lighting in the immediate area would be limited to certain times of the day and year (mid to late afternoon) when the solar angle meets the right conditions to illuminate the forest floor.

East –

Minor fill activities would be



Location of triangular cut at Post Mile 1.34

required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

Recommendations –

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations identified for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. The top 4 inches of duff (redwood tree litter) should be removed, stored at an approved location within the project limits and spread out on exposed slopes located within the Park boundary. Collected duff (redwood tree litter) should be spread out on the disturbed slopes of the triangular cut slope. After construction activities are completed, the triangular cut slope should be planted with seedlings collected prior to construction. The seedling composition should be similar to what tree species were removed (Douglas-fir and big leaf maple).

Station 71+50 to Station 74+50 (PM 1.35 to 1.41)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be slightly widened to provide for 2 foot shoulders where possible. Shoulders would be tapered as a measure to minimize impacts to existing trees located adjacent to the edge of pavement. A sliver fill would be constructed immediately parallel and east of the existing highway. Afterward, the proposed highway alignment would be shifted towards the east so the sliver fill becomes part of the northbound lane and shoulder. Existing roadway on the left side of the roadway not used for the new alignment would be

obliterated, pavement removed and graded to blend in with the surrounding contour. The end result would be a slightly realigned highway that closely mimics the original alignment. When completed, the realignment of the roadway in this location would be barely noticeable. Although five trees would be removed, the dense old growth forest would still be the dominant visual feature of the highway in this location. Due to the density of trees in the immediate area, combined with the scale of the large old growth redwoods, visual impacts created by the removal of the trees in the sliver fill area would be low. Spreading of duff (redwood tree litter) on disturbed slopes would mask visual cues that recent construction activities has occurred and that there was originally part of a road beyond the left shoulder.



Location of sliver fill at Post Mile 1.35 to 1.40

West –

Shifting of the alignment away from the left side of the highway would not impact the visual quality of the roadside environment. Obliteration, pavement removal and grading to blend in with the surrounding contour with subsequent spreading of duff (redwood tree litter) would mask out any visual cues that the abandoned roadbed had existed in that location.

East –

A crescent shaped fill slope paralleling the existing roadway would be constructed in this location. The proposed fill area is level with the existing roadway and would be 250 feet in length and would be 1:1 to 1.5:1 in steepness in order to minimize impacts to surrounding vegetation.. The total area of the cut slope would be approximately 1100 ft². Five trees would be removed prior to excavating the cut slope. The

largest of which includes a 18 inch and 19 inch DBH redwood. Other smaller seedlings, shrubs and groundcover species would need to be removed. The removal of the understory will partially open views of the highway from a park interpretation trail that is located approximately 50 feet east of the highway. The most noticeable increase in views of the road from the trail will occur in the northern half of the sliver fill area where the understory is most dense. The understory is not as dense in the southern half of the sliver fill area. The forest floor in this area is deeply shaded by the old growth redwood canopy towering above the highway in this location. The tops of the trees identified for removal are well below the old growth redwood canopy therefore removal of these trees would not in any way increase the amount of sunlight that reaches the ground in this section of the forest.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations identified for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. The top 4 inches of duff (redwood tree litter) should be removed, stored at an approved location within the project limits and spread out on exposed slopes located within the Park boundary. Collected duff (redwood tree litter) should be spread out on the disturbed slopes of the sliver fill. The fill slope should not be vegetated due to clear recovery requirements. The area adjacent to the sliver fill will not be planted at the request of the Department of Parks and Recreation. It is expected that native regeneration on the fill slope and areas where vegetation removal occurred would occur naturally.

Station 74+50 to Station 90+00 (PM 1.41 to 1.70)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be slightly widened to provide for 2 foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement when possible. There would be minor realignment of the existing roadway in places to smooth out curves. Five tanoaks ranging between 9 and 18 inches DBH would be removed. The tanoaks are located between Stations 87.64 and 88.70 which is near the intersection of US Route 101 and the park entrance. Impacts to the existing visual setting in this area would be low due to the removal of roadside vegetation however, these impacts would be diminish as forest regeneration naturally occurs.

West –

Minor cut and fill slope activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

East –

Minor cut and fill slope activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary and permanent erosion control use. The top 4 inches of duff should be removed, stored at an approved location within the project limits and spread out on exposed slopes located within the Park boundaries after cut and fill grading activities are completed and the slopes are ready to receive erosion control treatment.

Station 90+00 to Station 107+00 (PM 1.70 to 2.02)

Only new overlay (asphalt paving) is proposed for this section of highway. No other activities such as widening, shoulders or new cut/fill slopes are proposed at this location. No existing vegetation would be impacted. There would be no impacts to the existing visual setting in this area.

Station 107+00 to Station 111+00 (PM 2.02 to 2.10)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be widened to provide for 2 foot shoulders. The proposed alignment would be shifted approximately 10 feet into an existing cut slope. The roadway realignment would require the removal of all vegetation on the proposed cut slope. Vegetation coverage includes trees, shrubs and spotty groundcover. The tree canopy on the cut slope provides a moderate level of shade over the highway in this location. Removal of vegetation would cause the visual character of this area to be open and well sunlit during the daytime. Trees and vegetation on the right side of the road would remain and become the main vegetative focal point since the cut slope on the left side of the road would be barren of vegetation. Due to existing forest cover, the Eel River is not visible from the highway therefore there would be no impacts to the scenic status of the river.

This area is south of the Overpacks Grove Resort driveway and marks the transition between the dense old growth redwood viewscape prevalent in Richardson Grove State Park to the south and the commercial and residential landscape at this location and extending to the north.

Although there are some large old growth redwoods within the Singing Trees Recovery

Center property, most of the old growth redwoods in this area were cut over the past 100 years. Most of the trees and vegetation cover on the slope have pioneered since the old growth redwoods were cut. Tree species composition consists of approximately 70% tanoak, 24% Douglas-fir and 1% redwood. The loss of these trees on the left side of the highway would create a high impact to the visual quality to the highway corridor in this location. The combination of commercial and residential development and second growth forest cover in lieu of old growth redwood forest reduce the level of visual impacts from adverse to high.

West –

All existing vegetation including grasses, shrubs and seedlings and a 13+ foot DBH redwood stump. Currently existing vegetation moderately screen two cabins which are located on the left side of the highway 30 feet above the highway at the top of the cut slope. The surface of the proposed cut slope would rise 15 feet uphill at its highest point from the roadway and would be 300 feet in length. The total area of the cut slope would be approximately 3100 ft². The proposed top of cut would be 25 feet from nearest of the two cabins and the loss of vegetation would cause these structures to be clearly visible from the roadway. Subsequently, the roadway would be clearly visible from the cabins due to the loss of vegetative screening. The removal of the forest canopy will reduce the amount of shade the cabins experience in the morning when the sun is in the southeast.



Location of cut south of Overpacks Grove Resort driveway

East –

Minor cut and fill slope activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted. The removal of the forest canopy will reduce the amount of shade that Singing Trees and the highway experience in the afternoon when the sun is in the southwest.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. After construction activities are completed, the cut slope should be planted with seedlings collected prior to construction. The seedling composition should be similar to what tree species were removed (Douglas-fir, tanoak and redwood).

Station 111+00 to Station 114+00 (PM 2.10 to 2.15)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be widened to provide for 4 foot shoulders. The proposed alignment would be shifted approximately 4 feet into an existing cut slope starting north of the Overpacks Grove Resort driveway. The dominant visual feature in this location would be a large

soldier pile tieback wall which extends 300 feet in length. The proposed retaining wall would allow for the protection of existing vegetation which is located on the cut slope. Impacts to the visual character of the highway in this location due to the construction of the soldier pine tieback wall would be high however alternative of a large cut extending to the top of the slope and subsequent removal of all vegetation would have been much greater. The retaining wall allows for the preservation of most vegetation on the cut slope and would continue to screen views of the structures and utility corridor when seen from the highway. Conversely, the vegetation would continue to screen the highway when viewed from the structures.



Location of retaining wall north of Overpacks Grove Resort driveway

Although most of the redwoods in this area were cut over the past 100 years, there are at least 66 trees with a diameter of at least 4 inches located on the existing cut slope. They include forty-eight tan oak, two redwoods and seventeen Douglas-fir. Other smaller native plant species including trees under 4 inches in diameter, shrubs and grasses that cover the existing cut slope and would need to be removed as well. The tree canopy on the cut slope provides a moderate level of shade over the highway in this location. Removal of vegetation would cause the visual character of this area to be open and well sunlit during the daytime. Trees and vegetation on the right side of the road would remain and become the main

vegetative focal point. There are four structures and a utility line located near the top of the cut slope. Existing vegetation partially screens these structures from the highway. Depending on the amount of vegetation removed would dictate to what level the structures would become more visible.

West –

The main feature on this side of the highway would be a large soldier pile retaining wall. The soldier pile wall would consist of vertical steel I-beams with large timber infill. A concrete safety barrier would be located at the base of the retaining wall for the entire length of the structure. The wall would be approximately 300 feet in length and located approximately 8 feet from the edge of traveled way (fog line). The wall would have a maximum height of 17 feet and a little more than half of the wall would rise at least 13 feet above the highway. Between Stations 112+35 and 112+75, the wall would decrease in height due to changes in the local topography. At the lowest point (Station 112+55), the wall would rise 7 feet above the highway. Approximately 20 tan oak would be removed prior to the construction of the retaining wall.



Similar type of retaining wall located in Del Norte Redwoods State Park

East –

Minor fill activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. After construction activities are completed, the area above the retaining wall should be planted with seedlings collected prior to construction. The seedling composition should be similar to what tree species were removed (Douglas-fir, tan oak and redwood).

Station 114+00 to Station 116+00 (PM 2.15 to 2.19)

The highway would be slightly widened to provide for 4 foot shoulders where possible. Proposed shoulders would be tapered where existing trees are located adjacent to the edge of pavement. Existing vegetation located where cut and fill slopes are proposed would be removed prior to grading.

West –

Minor cut activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

East –

Minor fill activities would be required in this section of highway. Although no major trees would be removed prior to slope excavation, some existing grasses, shrubs and seedlings may be impacted.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use.

Summary of Project Impacts

Existing visual quality of US Route 101 within the project area is very high, due primarily to the natural vegetation including an old growth redwood forest, topography, highway facility and other park related elements. The main visual detractors within the project vicinity will be minor cut and fill activities and vegetation removal within Richardson Grove State Park; and a large cut slope and retaining wall adjacent to the Overpacks driveway outside of the park boundary.

Affected viewers are those who travel the highway and are in the immediate vicinity of the project. Viewers through this area generally have a very high expectation regarding scenic quality. Below are the results of the analysis from Attachments 1, located at the end of this report.

Viewshed	Existing Visual Quality Value 1=Low, 7=High (values are rounded)	Proposed Visual Quality Value 1=Low, 7=High (values are rounded)	Net Change in Visual Quality Value (rounded)
1 (From Highway)	6.19	6.19	0.0
2 (From Highway)	7.0	7.0	0.0
3 (From Highway)	7.0	6.91	-0.09
3 (From Trail)	6.86	6.79	-0.07
4 (From Highway)	7.0	6.99	-0.01
4 (From Trail)	6.86	6.86	0.0
5 (From Highway)	7.0	6.99	-0.01
6 (From Highway)	7.0	7.0	0.0
6 (From Park Facility)	6.86	6.78	-0.08
7 (From Highway)	6.03	5.18	-0.85
7 (From Overpacks/Singing Trees)	6.03	5.14	-0.89
8 (From Highway)	6.03	4.99	-1.04
8 (From Residences)	6.03	6.01	-0.02
9 (From Highway)	6.25	6.25	0.0

The project will result in a low to moderate alteration of the visual environment within Richardson Grove State Park and a moderate to high alteration of the visual environment north of the park boundary.

Conclusion:

The overall impacts to the visual quality of the highway within the project limits are acceptable. When analyzing the visual changes created by this project, the project scope needs to be broken down into two halves. The area located within the Richardson Grove State Park boundaries and the curve corrections located in the commercial area north and south of the Overpacks Grove Resort driveway. Impacts to the visual setting within Richardson Grove State Park would be low to moderate due to the minimal area

where vegetation removal is to occur and cut and fill activities are to occur. When looking at the highway within the Park boundaries, the visual character of the highway is a slow curvy road with large old growth redwoods dominating the landscape. After this project, the highway would still be a slow curvy road with large old growth redwoods dominating the landscape.

Although 23 large trees would be removed between the triangular cut slope and sliver fill, the visual quality of the dense old growth redwood forest would be minimally impacted. The loss of trees on the triangular cut slope is similar to what may occur when an old growth redwood tree falls during a wind event. After an event of that nature occurs, other small trees in the immediate area are quick to react to the small opening in the canopy. A small 12 inch DBH redwood tree adjacent to the downed old growth tree would be quick to react and grow to fill in the canopy before competing trees nearby are able to react. The combination of spreading duff (redwood tree litter) and planting the triangular cut slope with seedlings similar to the species that were removed would over time diminish impacts created by the initial removal of the existing trees. Impacts created by sliver fill activities are minimal. The loss of the seven trees would not be noticeable since the dominant visual element on that side of the road are the large redwoods located adjacent to the area that would be impacted by construction activities. The roadside would still be dominated by large redwood trees immediately adjacent or within close proximity to the edge of pavement.

The area where visual impacts would be the greatest would be north and south of the Overpack’s Grove Resort outside of the Richardson Grove State Park boundary. To the south of the driveway, the cut slope and loss of trees to the left of the highway would diminish the visual setting which is a somewhat open mixed conifer forest. Although all the trees to the right of the highway would remain, the loss of treescape and forest overstory would change the character of the highway along this section of highway. The roadway and roadsides would now receive direct sunlight whereas before, the ground was shaded by the forest canopy during most parts of the day.

The dominant feature of the entire project would be the construction of the soldier pile retaining wall north of the Overpack’s Grove Resort. The scale the retaining wall create a high visual impact however the alternative of a large cut slope and removal of all trees to the left of the highway would have impacted the viewshed to a greater level and the natural view is compromised with the Singing Trees structures on the opposite side of the highway. The retaining wall allows for the protection of most trees on the cut slope and subsequently reduces the loss of forest canopy above the highway. The ground in this area would now experience sunlight during the first half of the day however remaining canopy on the cut slope would continue to provide shade during the afternoon.

If you have any questions or need additional assistance, please do not hesitate to call me at 707.441.3974.

Jim Hibbert, Landscape Architect
North Region – Office of Landscape Architecture - Eureka

Addendum 1
Viewshed Analysis for Richardson Grove STAA Project
01-464800 ---- HUM 101 ---- Post Mile 1.2/2.2

Viewshed 1 – Station 60+0 to Station 63.40 (Post Mile 1.13 to 1.2)
Views from Highway

VISUAL QUALITY ANALYSIS EXISTING	Evaluation Scale 1-7 1=Very Low, 7= Very High

Appendix K – Visual Impact Assessment

VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.5	Absence of Encroachment	6.0	Man-made /Natural	6.5
	Vegetation	5.0	Overall Intactness	6.5	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.25	AVERAGE U	6.5
	Landform	6.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.833	Visual Quality $=(V+I+U)/3$		6.194	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 1 – Station 60+0 to Station 63.40 (Post Mile 1.13 to 1.2)
Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.5	Absence of Encroachment	6.0	Man-made /Natural	6.5
	Vegetation	5.0	Overall Intactness	6.5	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.25	AVERAGE U	6.5
	Landform	6.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.833	Visual Quality $=(V+I+U)/3$		6.194	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 2 – Station 63+40 to Station 70.70 (Post Mile 1.2 to 1.33)
Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	7.0	Visual Quality $=(V+I+U)/3$		7.0	
EVALUATOR Jim Hibbert, Project Landscape Architect					DATE	

Landscape Architecture Office, North Region - Eureka	05/16/08
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Viewshed 2 – Station 63+40 to Station 70.70 (Post Mile 1.2 to 1.33)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.9	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	6.9	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	6.9	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	6.9	Visual Quality $=(V+I+U)/3$		6.933	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 3 – Station 70+70 to Station 71.50 (Post Mile 1.33 to 1.35)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	7.0	Visual Quality $=(V+I+U)/3$		7.0	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 3 – Station 70+70 to Station 71.50 (Post Mile 1.33 to 1.35)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	

Appendix K – Visual Impact Assessment

1	Manmade Development	7.0	Absence of Encroachment	6.9	Man-made /Natural	6.9
	Vegetation	6.9	Overall Intactness	6.9	Overall Unity	6.9
	Water	N/A	AVERAGE I	6.9	AVERAGE U	6.9
	Landform	6.9	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.933	Visual Quality $= (V+I+U)/3$	6.911		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 3 – Station 70+70 to Station 71.50 (Post Mile 1.33 to 1.35)

Views from Nature Trail Extending South from Visitor Center (East of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.666	Visual Quality $= (V+I+U)/3$	6.855		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 3 – Station 70+70 to Station 71.50 (Post Mile 1.33 to 1.35)

Views from Nature Trail Extending South from Visitor Center (East of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.8	Man-made /Natural	6.9
	Vegetation	6.9	Overall Intactness	6.8	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.8	AVERAGE U	6.95
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.933	Visual Quality $= (V+I+U)/3$	6.794		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Appendix K – Visual Impact Assessment

Viewshed 4 – Station 71+50 to Station 74.50 (Post Mile 1.35 to 1.41)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High 3	
	AVERAGE V	7.0	Visual Quality $=(V+I+U)/3$		7.0	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 4 – Station 71+50 to Station 74.50 (Post Mile 1.35 to 1.41)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	6.9	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High 3	
	AVERAGE V	6.966	Visual Quality $=(V+I+U)/3$		6.988	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 4 – Station 71+50 to Station 74.50 (Post Mile 1.35 to 1.41)

Views from Nature Trail Extending North from Visitor Center (East of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0

Appendix K – Visual Impact Assessment

	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High	3
	AVERAGE V	6.666	Visual Quality $=(V+I+U)/3$	6.855	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka				DATE 05/16/08	

Viewshed 4 – Station 71+50 to Station 74.50 (Post Mile 1.35 to 1.41)
Views from Nature Trail Extending North from Visitor Center (East of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.666	Visual Quality $=(V+I+U)/3$	6.855		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 5 – Station 74+50 to Station 90.00 (Post Mile 1.41 to 1.70)
Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	7.0	Visual Quality $=(V+I+U)/3$	7.0		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 5 – Station 74+50 to Station 90.00 (Post Mile 1.41 to 1.70)
Views from Highway

VISUAL QUALITY ANALYSIS	Evaluation Scale 1-7
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Appendix K – Visual Impact Assessment

PROPOSED			1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	6.9	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.966	Visual Quality $=(V+I+U)/3$	6.988		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 6 – Station 90+00 to Station 107.00 (Post Mile 1.7 to 2.02)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	7.0	Visual Quality $=(V+I+U)/3$	7.0		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 6 – Station 90+00 to Station 107.00 (Post Mile 1.7 to 2.02)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	7.0	Absence of Encroachment	7.0	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	7.0	Overall Unity	7.0
	Water	N/A	AVERAGE I	7.0	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		

Appendix K – Visual Impact Assessment

	AVERAGE V	7.0	Visual Quality =(V+I+U)/3	7.0
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka				DATE 05/16/08

Viewshed 6 – Station 90+00 to Station 107.00 (Post Mile 1.7 to 2.02)

Views from Park Maintenance Facilities (East of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	6.0	Absence of Encroachment	6.9	Man-made /Natural	7.0
	Vegetation	7.0	Overall Intactness	6.9	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.9	AVERAGE U	7.0
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	6.666	Visual Quality =(V+I+U)/3	6.855		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 6 – Station 90+00 to Station 107.00 (Post Mile 1.7 to 2.02)

Views from Park Maintenance Facilities (East of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.9	Absence of Encroachment	6.8	Man-made /Natural	6.9
	Vegetation	6.9	Overall Intactness	6.8	Overall Unity	7.0
	Water	N/A	AVERAGE I	6.8	AVERAGE U	6.95
	Landform	7.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High		
	AVERAGE V	6.6	Visual Quality =(V+I+U)/3	6.783		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 7 – Station 107+00 to Station 111.00 (Post Mile 2.02 to 2.1)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			

Appendix K – Visual Impact Assessment

VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.833	Visual Quality = $(V+I+U)/3$		6.027	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 7 – Station 107+00 to Station 111.00 (Post Mile 2.02 to 2.1)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	5.0	Man-made /Natural	5.0
	Vegetation	5.0	Overall Intactness	5.5	Overall Unity	5.25
	Water	N/A	AVERAGE I	5.25	AVERAGE U	5.125
	Landform	5.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.166	Visual Quality = $(V+I+U)/3$		5.180	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 7 – Station 107+00 to Station 111.00 (Post Mile 2.02 to 2.1)

Views from Overpacks (West of HUM 101) and Singing Trees (East of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3

Appendix K – Visual Impact Assessment

	AVERAGE V	5.833	Visual Quality =(V+I+U)/3	6.027
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka				DATE 05/16/08

Viewshed 7 – Station 107+00 to Station 111.00 (Post Mile 2.02 to 2.1)
Views from Overpacks (West of HUM 101) and Singing Trees (East of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	5.0	Man-made /Natural	5.0
	Vegetation	5.0	Overall Intactness	5.5	Overall Unity	5.0
	Water	N/A	AVERAGE I	5.25	AVERAGE U	5.0
	Landform	5.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.166	Visual Quality =(V+I+U)/3	5.138		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 8 – Station 111+00 to Station 114.00 (Post Mile 2.1 to 2.15)
Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality =(V+I+U)/3	6.027		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 8 – Station 111+00 to Station 114.00 (Post Mile 2.1 to 2.15)
Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			

Appendix K – Visual Impact Assessment

VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.0	Absence of Encroachment	5.0	Man-made /Natural	4.75
	Vegetation	5.0	Overall Intactness	5.5	Overall Unity	5.0
	Water	N/A	AVERAGE I	5.25	AVERAGE U	4.875
	Landform	4.5	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	4.833	Visual Quality $=(V+I+U)/3$		4.986	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 8 – Station 111+00 to Station 114.00 (Post Mile 2.1 to 2.15)
Views From Residences at Top of Cut Slope (West of HUM 101)

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.833	Visual Quality $=(V+I+U)/3$		6.027	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 8 – Station 111+00 to Station 114.00 (Post Mile 2.1 to 2.15)
Views From Residences at Top of Cut Slope (West of HUM 101)

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	5.5	Man-made /Natural	5.5
	Vegetation	5.75	Overall Intactness	5.75	Overall Unity	6.0
	Water	N/A	AVERAGE I	5.625	AVERAGE U	5.75
	Landform	5.75	Viewer Sensitivity Ranking (1-3)		1=Low, 3=High	3
	AVERAGE V	5.666	Visual Quality $=(V+I+U)/3$		6.013	
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Appendix K – Visual Impact Assessment

Viewshed 9 – Station 114+00 to Station 116.00 (Post Mile 2.15 to 2.19)

Views from Highway

VISUAL QUALITY ANALYSIS EXISTING			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality $=(V+I+U)/3$	6.25		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Viewshed 9 – Station 114+00 to Station 116.00 (Post Mile 2.15 to 2.19)

Views from Highway

VISUAL QUALITY ANALYSIS PROPOSED			Evaluation Scale 1-7 1=Very Low, 7= Very High			
VIEWSHED	VIVIDNESS (V)		INTACTNESS (I)		UNITY (U)	
1	Manmade Development	5.5	Absence of Encroachment	6.0	Man-made /Natural	6.0
	Vegetation	6.0	Overall Intactness	6.0	Overall Unity	6.5
	Water	N/A	AVERAGE I	6.0	AVERAGE U	6.25
	Landform	6.0	Viewer Sensitivity Ranking (1-3)	1=Low, 3=High 3		
	AVERAGE V	5.833	Visual Quality $=(V+I+U)/3$	6.25		
EVALUATOR Jim Hibbert, Project Landscape Architect Landscape Architecture Office, North Region - Eureka					DATE 05/16/08	

Visual Impact Assessment Addendum

State of California

Business, Transportation and Housing Agency

Memorandum

To: Deborah Harmon
North Region Environmental Management

Date: 8 July 2009

File: 01-HUM-101
PM: 1.1/2.2
EA: 01-464800
Richardson Grove STAA - Addendum 2

From: Department of Transportation
North Region - Landscape Architecture, Eureka

The following addendum has been prepared for the proposed STAA curve correction project on State Route 101 in Richardson Grove State Park in Humboldt County, California. This addendum addresses a proposed fill slope wall as an alternative to the proposed cut slope wall between Stations 111+00 and Station 114+00 (PM 2.10 to 2.15).

Project Description

Route 101 is the primary north-south route serving coastal California and is critical to the commerce of northwestern California. The existing Route 101 through Richardson Grove is a narrow two-lane road with large old growth redwood trees encroaching into the shoulders. Industry standard sized trucks conforming to the Surface Transportation Assistance Act (STAA) are currently prohibited from traveling Route 101 north of Leggett due to existing concerns at Confusion Hill and Richardson Grove. These restrictions are in place primarily because of concerns with the 'off-tracking' of these longer trucks when they travel around curves. The restrictions at Confusion Hill would be lifted with the completion of the Confusion Hill bypass in 2009. This would leave Richardson Grove as the only remaining location on Route 101 restricting access of STAA trucks traveling into Humboldt County from the south.

This project would adjust the roadway alignment to accommodate STAA truck travel through Richardson Grove. These improvements would eliminate the STAA restrictions at three curves and also help other vehicles safely travel through Richardson Grove. Improvement of goods movement would help local businesses stay competitive in the marketplace.

The project has been broken into three sections. Alterations to the existing landscape would only occur in sections 1 and 3. Improvements in the middle portion, section 2, would consist only of resurfacing the existing pavement. The primary modifications to the existing landscape include a small triangular shaped cut slope and a sliver fill slope near the south end of the grove and a two larger cut slopes towards the north end of the project limits outside the Park near Overpacks driveway and the Singing Trees Recovery Center. A soldier pile tieback wall is proposed at the location of the larger cut slope towards the north end of the project limits. The project scope includes the provision of 12' lanes and 2' shoulders where possible however large roadside redwoods located along the existing roadside would be preserved. In other locations, minor fill activity to allow for shoulder widening may be required. Old pavement not needed would be obliterated and removed from site.

-- Caltrans improves mobility across California--

Visual Impacts

Newly Proposed Fill Slope Alternative

Station 111+00 to Station 114+00 (PM 2.10 to 2.15)

New overlay (asphalt paving) is proposed for this section of highway. The highway would be widened to provide for 4 foot shoulders. A combination of soldier pile and crib retaining wall would be constructed parallel of the existing highway. Afterward, the proposed highway alignment would be shifted towards the east so the wall infill becomes part of the northbound lane and shoulder. Existing roadway on the left side of the roadway not used for the new alignment would be obliterated, pavement removed and graded to blend in with the surrounding contour. The end result would be a slightly realigned highway that closely mimics the original alignment. When completed, the realignment of the roadway in this location would be noticeable due to the construction of a retaining wall and concrete safety barrier with bicycle railing. Although five trees with a DBH of greater of 4 inches and 14 seedlings with a DBH of less than 2 inches would be removed, the forest would still be the dominant visual feature of the highway in this location. The retaining wall and safety barrier will create a high visual impact when viewed from the

highway and Singing Trees Recovery Center due to the addition of a new built element within the natural setting. Spreading of duff on disturbed slopes would help mask visual cues that recent construction activities.

Although most of the redwoods in this area were cut over the past 100 years, there are at least 5 trees with a diameter of at least 4 inches located on the existing fill slope. They include 1 Redwood, 3 Tan Oaks and 1 Douglas Fir. Other smaller native plant species include 14 Douglas Fir and 4 Tan Oak under 4 inches in diameter,

shrubs and grasses that cover the existing cut slope and would need to be removed as well. The tree canopy on the cut slope provides a moderate level of shade over the highway in this location. Removal of vegetation would cause the visual character of this area to be open and well sunlit during the daytime. Trees and vegetation on the left side of the road would remain and become the main vegetative focal point. There are four structures and a utility line located near the top of the cut slope. Existing vegetation partially screens these structures from the highway.

West –

There will be no cut or fill activities west of the existing roadway. No major trees, shrubs, seedlings or grasses will be impacted.



Location of retaining wall adjacent to Singing Trees Recovery Center

East

New overlay (asphalt paving) is proposed for this section of highway. The highway would be widened to provide for 4 foot shoulders. The proposed alignment would be shifted approximately 5 feet to the east of the existing centerline. The dominant visual feature from the roadway in this location would be a concrete Type-80 safety barrier with bicycle railing which extends approximately 183 feet in length and rises 54 inches in height. The proposed fill slope retaining wall would negate the need for disturbing the existing cut slope west of the alignment and allow for the protection of existing vegetation. Impacts to the visual character of the highway in this location due to the construction of a combination crib wall and soldier pile wall would be high however the alternative of a large retaining wall, cut slope and vegetation removal would be much greater. The proposed retaining wall and safety barrier would be most visible from the Singing Trees Recovery Center property including several buildings visible from the roadway. Native vegetation including small trees and shrubs directly below the existing roadside would be removed prior to construction of the wall. This vegetation partially screens the roadway from the Singing Trees property.

Recommendations -

Any viable tree seedlings that meet the needs of project revegetation tasks should be removed and transplanted to locations suitable for planting. Seedlings and shrubs not suitable for planting activities should be chipped up and used for temporary or permanent erosion control use. After construction activities are completed, the area below the retaining wall should be planted with seedlings collected prior to construction. The seedling composition should be similar to what tree species were removed (Douglas-fir, tan oak and redwood). The bike rail used on the Type-80 should be the recently approved curved design used on Martin's Ferry School Creek Bridge on MN 169 (EA: 01-364600). The visible part of the I-beam should be painted dark brown (Federal Color #30111) and the curved bike rail should be painted dark green (Federal Color #34090).

Summary of Project Impacts

Existing visual quality of Route 101 within the project area is very high, due primarily to the natural vegetation including an old growth redwood forest, topography, highway facility and other park related elements. The main visual detractors within the project vicinity will be minor cut and fill activities and vegetation removal within Richardson Grove State Park; and a large cut slope and retaining wall adjacent to the Overpacks driveway outside of the park boundary.

Affected viewers are those who travel the highway and are in the immediate vicinity of the project. Viewers through this area generally have a very high expectation regarding scenic quality. Below are the results of the analysis from Attachments I, located at the end of this report.

Viewshed	Existing Visual Quality Value 1=Low, 7=High (values are rounded)	Proposed Visual Quality Value 1=Low, 7=High (values are rounded)	Net Change in Visual Quality Value (rounded)
1 (From Highway)	6.19	6.19	0.0
2 (From Highway)	7.0	7.0	0.0
3 (From Highway)	7.0	6.91	-0.09
3 (From Trail)	6.86	6.79	-0.07
4 (From Highway)	7.0	6.99	-0.01
4 (From Trail)	6.86	6.86	0.0
5 (From Highway)	7.0	6.99	-0.01
6 (From Highway)	7.0	7.0	0.0
6 (From Park Facility)	6.86	6.78	-0.08
7 (From Highway)	6.03	5.18	-0.85
7 (From Overpacks/Singing Trees)	6.03	5.14	-0.89
8 Cut Slope Wall (From Highway)	6.03	4.99	-1.04
8 Cut Slope Wall (From Residences)	6.03	6.01	-0.02
8 Fill Slope Wall (From Highway)	6.03	5.94	-0.09
8 Fill Slope Wall (From Residences)	6.03	6.01	-0.02
8 Fill Slope Wall (From Singing Trees)	6.03	4.89	-1.14
9 (From Highway)	6.25	6.25	0.0

The project will result in a low to moderate alteration of the visual environment within Richardson Grove State Park and a moderate to high alteration of the visual environment north of the park boundary.

If you have any questions or need additional assistance, please do not hesitate to call me at 707.441.3974.

Jim Hibbert, Landscape Architect
North Region – Office of Landscape Architecture - Eureka

Simulations

Figure 1 Before Photo at PM 1.35 looking south towards the area where the cut at PM 1.36 would take place.



Figure 2 After Photo at PM 1.35 looking south towards the area of cut at PM 1.36. The area of cut is to the right of the road behind the large redwood with the hazard marker.



Figure 3 Before Photo at PM 1.40 looking south, where greatest alignment shift would occur



Figure 4 After Photo at PM 1.40 looking south, where greatest alignment shift of US Route 101 would occur. Centerline has shifted to the left.



Figure 5 Before Photo at PM 2.10 outside the park looking north at where the retaining wall will be located.



Figure 6 After Photo at PM 2.10 outside the park looking north at the barrier for the retaining wall.



